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THE SOUTH AFRICAN SPECIES OF *LIGHTFOOTIA*.

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Lightfootia is a genus which is confined to Africa, belonging to Campanulaceae allied to *Wahlenbergia*. About 65 species have been described which are found in South and Central Africa and in Madagascar.

The species fall into two rather distinct groups, the one characterised by a shrubby habit and small often ericoid leaves, the other herbaceous and often annual, with larger and thinner leaves. These two groups show little geographical overlapping. The shrubby species are almost confined to the south, very few occurring north of S.W. Africa or S. Rhodesia. The herbaceous group is found in Central Africa, the few species that extend south into the Union are confined to the east coast. The present account deals only with those species occurring within the Union of South Africa.

Within the Union the greatest concentration of species is in the winter-rainfall area of the south-west of the Cape Province. The genus is, however, far from confined to this region, it extends all along the southern coastal belt and there are species in the summer rainfall areas both on the coast and on the high veld. A few species extend into the arid regions of the karroo though there are none in the driest parts.

The South African species were last revised in 1865 by Sonder for *Flora Capensis* (3. 554.) who at that time recognised 25 species. A certain number of species have been described since but no general revision has been attempted. In this account the number of species accepted is raised to 46 of which 13 are described for the first time. In addition 11 varieties are recognised of which 8 are new. While not all the species recognised by Sonder or by later workers have been upheld, the increased number is due to more intensive collecting and especially to collecting in the summer

months. With few exceptions the plants flower between December and March and when not in flower are inconspicuous and very easily overlooked. Further, increased collecting and the resulting larger quantities of material available has made possible the segregation of species hitherto treated as group species. A notable example is that referred to as "*L. tenella* A.DC." which has been resolved into a number of separate units.

In the present study fresh material has been examined wherever possible. In addition, material in the following herbaria has been examined:—

Bolus Herbarium, University of Cape Town	BOL
Guthrie Herbarium, University of Cape Town	CT
South African Museum, Cape Town	SAM
National Herbarium, Pretoria	PRE
National Botanic Gardens, Kirstenbosch ..	NBG
Royal Botanic Gardens, Kew	K
British Museum (Nat. Hist.), London ..	BM
Botany School, Cambridge	GCE
Conservatoire de Botanique, Geneva ..	G
Naturhistorika Riksmuseum, Stockholm ..	S

In addition, the specimens in the Linnean herbarium, London, have been consulted, and information and photographs supplied from the Thunberg herbarium in Uppsala.

To the directors and curators of these institutions sincere thanks are expressed for the facilities afforded for study in the institutions or for the loan of specimens.

Type specimens of new species, unless otherwise stated, have been deposited in the Bolus Herbarium, Cape Town.

LIGHTFOOTIA.

L'Herit. Sert. Ang. 3. t. 14. 1788.

Herbs or more often shrublets, perennial or annual. Leaves alternate or less often opposite, simple, very often toothed. Inflorescence cymose, commonly paniculate, the flowers sessile or pedicellate. Flowers small, 5- or 4-merous. Calyx with persistent lobes more or less enlarged at the fruiting stage. Corolla 5- or 4-partite, the lobes longer than wide and usually narrow and parallel-sided, the tube varying from very short to about as long as the lobes. Stamens free from the corolla, the anthers narrow, the filaments widened and usually ciliate at the base. Disc annular. Style simple, as long as or longer than the corolla: stigma 5-, 4-, 3- or 2-fid. Ovary ranging from almost or quite superior to half or more

inferior, 5-, 4-, 3- or 2-chambered. Placentation axile with numerous ovules. Fruit a capsule opening at the top by as many valves as there are chambers in the ovary. Seeds small.

The type species is *L. parvifolia* (Berg.) Adamson (*L. oxycoccoides* L'Herit.).

The flowers are distinctly protandrous. The genus is very closely allied to *Wahlenbergia* Schrad. Cat. Hort. Goett. 1814 (*Nom. cons.*) and a clear line of separation between them is not always easy to draw. The main differentiating features are that *Lightfootia* has a more deeply cleft corolla with the lobes longer than wide and at least as long as the tube, a style as long as or longer than the corolla, and in many species a shrubby habit and small leaves. Sonder looked upon angular seeds as distinctive, but this does not hold for all the species. While no one of these features is diagnostic by itself, taken together they do separate a coherent and apparently natural group. Von Brehmer (Bot. Jahrb. 53. 12. 1915) discusses the relationships of the two genera and brings forward arguments for maintaining them which need not be repeated. He considered that *Lightfootia* was a derivative from the stock that gave rise to *Wahlenbergia* and that separation had occurred early in the history.

A. De Candolle (Ann. Sci. Nat. 5. 6. 326. 1866) suggested a sub-division into two subgenera, *Mesotheca* in which the ovary is 3 or more chambered and at least partly inferior, and *Anotheca* in which the ovary is 2-chambered and superior. The latter are annuals. These subgenera are not accepted here as the distinctions are not very clear-cut. Also many of the tropical species are still incompletely known.

Sonder (l.c.), for convenience, divided the species into three series separated on the number of chambers in the ovary. A more detailed sub-division was made by Von Brehmer (l.c.) who recognised and named a number of series. His scheme is followed to a large extent here. Among the series, one, *Junceae*, differs so much from all the others that it is now accepted as constituting a distinct section of the genus. This was, in fact, first carried out by A. De Candolle (DC. Prodr. 7. 441. 1839) though he included the species under *Wahlenbergia*.

KEY TO THE SECTIONS.

- | | |
|--|------------------------|
| 1. Ovary 5-, 4- or 3-chambered, rarely 2-chambered, not wholly inferior: fruit about as wide as long, firm, the valves about as long as the lower part | 1. <i>Lightfootia</i> |
| 1. Ovary 2-chambered, wholly inferior: fruit longer than wide, thin-walled, the valves much shorter than the lower part | 2. <i>Phyteumoides</i> |

Section 1. **LIGHTFOOTIA.**

Shrublets or herbs. Flowers mostly small. Ovary 3-, 4- or 5-locular, rarely 2-locular, ranging from superior to almost inferior. Fruit firm, some-

times almost woody, as wide as or wider than long, with valves about as long as the lower part.

As this section contains the type species, it retains the generic name. The section is divisible into a number of series based upon vegetative and floral features.

KEY TO THE SERIES.

1. Shrubs: leaves small, rarely over 1 cm. long and 0.2 cm. wide.
2. Ovary superior or nearly so, wider than long.
 3. Leaves thin, longer than wide.
 4. Pedicels short or wanting: ovary 5-, 4- or 3-chambered *Subulatae*
 4. Pedicels long and slender: ovary 3-chambered *Parvifoliae*
 3. Leaves thick, about as wide as long.
 5. Leaves alternate, fasciculate: flowers solitary on rigid pedicels *L. intricata*
 5. Leaves opposite: flowers many *L. multicaulis*
2. Ovary inferior or half-inferior, 3- or 2-chambered.
 6. Corolla with a tube more than 1 mm. long.
 7. Leaves opposite *Oppositifoliae*
 7. Leaves alternate.
 8. Leaves revolutely rolled, ericoid *Laricifoliae*
 8. Leaves not rolled.
 9. Flowers sessile *L. spicata*
 9. Flowers pedicellate.
 10. Leaves spreading or ascending.
 11. Leaves distant, short, subulate: stems green *Paniculatae*
 11. Leaves, at least the lower, close, not subulate: stems not green.
 12. Slender: leaves mucronate: corolla tube longer than the calyx lobes *L. divaricata* var. *debilis*
 12. Stout: leaves acute: corolla tube not longer than the calyx lobes.
 13. Leaves revolute, toothed: flowers solitary or few, in cymose groups *L. divaricata*
 13. Leaves not revolute: flowers many, in a panicle.
 14. Panicle racemose or spicate: corolla tube shorter than the calyx lobes: leaves keeled below *Longifoliae*
 14. Panicle branched: corolla tube as long as the calyx lobes: leaves flat, toothed *Denticulatae*
 10. Leaves reflexed or recurved.
 15. Leaves rigid, concave above: corolla tube as long as or longer than the calyx lobes *Adpressae*
 15. Leaves flat, not rigid: corolla tube shorter than the calyx lobes *Thunbergianae*
 6. Corolla tube very short, less than 1 mm. long.
 16. Leaves ericoid, revolutely rolled *Laricifoliae*.
 16. Leaves flat or revolute at the edges only.
 17. Leaves ascending: inflorescence contracted: stems usually unbranched *Longifoliae*

- 17. Leaves spreading or reflexed.
 - 18. Leaves spreading, very short: flowers few in a terminal group *L. pauciflora*
 - 18. Leaves reflexed or recurved.
 - 19. Leaves concave above.
 - 20. Leaves thick: flowers axillary or on stout branches *Tenellae*
 - 20. Leaves rigid, not thick: flowers on long slender branches *Adpressae*
 - 19. Leaves flat.
 - 21. Upper internodes long: inflorescence a panicle: flowers blue *Longifoliae*
 - 21. Leaves uniformly distributed: flowers axillary, white *Tenellae*
- 1. Tall herbs: leaves over 1 cm. long and 0·3 cm. wide.
 - 22. Flowers sessile, in heads or spikes.
 - 23. Heads terminal *Rupestres*
 - 23. Heads lateral, sessile *Marginatae*
 - 22. Flowers pedicellate, in a panicle *Abyssinicae*

Following the precedent set by Sonder and von Brehmer, the series *Subulatae* characterised by having more than 3 chambers in the ovary is placed first. The series *Oppositifoliae* and *Parvifoliae* which are allied in floral structure though constantly 3-chambered are placed next. Of the series, *Denticulatae* is the least specialised in habit, stands nearest to *Wahlenbergia*, and is probably the most primitive.

Series 1. **Subulatae** v. Brehm. l.c.

Shrublets, usually small. Leaves alternate or opposite. Flowers axillary, most often solitary, sessile or on short pedicels. Ovary almost superior, wider than long, 5-, less often 4- or 3-chambered.

The type species is *L. subulata* L'Herit.

KEY TO THE SPECIES.

- 1. Leaves very slender, linear-trigonus: corolla tube very short.
 - 2. Leaves all alternate: fruit valves as long as the calyx lobes . . . *subulata*
 - 2. Leaves all or most of them opposite.
 - 3. Ovary conical above: valves as long as the calyx lobes . . . *subulata* var. *tenuifolia*
 - 3. Ovary flat on top: valves shorter than the calyx lobes . . . *subulata* var. *congesta*
- 1. Leaves 1 mm. or more wide, flat at least at the base: flowers usually hispid: corolla tube at least 1 mm. long.
 - 4. Leaves alternate.
 - 5. Flowers sessile: ovary about half inferior *spicata*
 - 5. Flowers pedicellate: ovary half superior *rubrioides* var. *Stokoei*
 - 4. Leaves mostly opposite: flowers pedicellate: ovary at least half superior.
 - 6. Leaves concave above or rolled upwards: corolla tube shorter than the lobes *rubrioides*
 - 6. Leaves flat: corolla tube as long as the lobes.
 - 7. Erect shrublets: leaves short, rigid: flowers solitary or few: ovary 3-chambered *brachyphylla*
 - 7. Almost herbaceous: leaves thick: flowers grouped at the top: ovary usually 4-chambered *multicaulis*

1. *L. subulata* L'Herit. Sert. Ang. 1. 1788. *L. sessiliflora* Sond. Fl. Cap. 3. 555. 1865. *non* Spreng. *Campanula sessiliflora* L.f. Supp. Pl. 139. 1781. *L. fruticosa* Druce Rep. Bot. Ex. Club Br. Is. 3. 5. 420. 1914. (cf. Adamson, J. S. Afr. Bot. 19. 157. 1953).

Stems woody in the lower parts, commonly with long prostrate branches and few or many erect branchlets. Young stems with short hairs either all over or in lines. Leaves alternate, crowded or distant, up to 1.5 cm. long, linear-subulate, flat or grooved above, keeled below, often trigonous, toothed on the edges, commonly with axillary fascicles. Flowers in the upper axils, crowded or distant, many or few, on pedicels 1—4 mm. long, shorter than the subtending leaves. Calyx lobes 2—4 mm. long, acute or mucronate, keeled and almost trigonous, bulged or even pouches at the base. Corolla blue, pale blue or white, 5—7 mm. long, rather thin, the tube very short, the lobes narrow and almost cucullate. Bases of the filaments oblong-spathulate, acute to obtuse or even truncate, ciliate. Ovary almost superior, the lower part very short, retuse at the base, usually hairy, the upper part conical, glabrous. Style thickened near the top: stigma lobes 5 or 4, rarely 3. Fruit wider than long, 5-, 4- or rarely 3-chambered, the valves as long as the calyx lobes.

The type is *Masson* s. n. in herb. BM.

Common on stony or gravel soils at low altitudes in the S.W. Cape. Variable in habit and in size. While the number of carpels is most commonly 5, individual flowers may have 4 or more rarely 3.

VAN RHYNSDORP. Giftberg, *Drege* (*L. subulata* d) (G): *Esterhuysen* 22018 (BOL).

CERES. Leeuwfontein, *Pearson* 3234 (BOL).

WORCESTER. Bainskloof, *Moss* 5388 (BM): *Salter* 5115 (BOL).

PAARL. Witte Riv., *Adamson* 4742: *Esterhuysen* 12740 (BOL): Seven Sisters, *Adamson* 4746: Suurvlaakte, *Esterhuysen* 12336 (BOL): Dal Josaphat, *Drege* 6312 (G.S): Du Toits Kloof, *Drege* (*L. subulata* b) (G): Wemmershoek, *Compton* 4952 (NBG): Franschhoek, *L. Bolus* (BOL): *Esterhuysen* 3081 (BOL): *Galpin* 12449 (K, PRE): *Rodin* 3081 (K, PRE).

STELLENBOSCH. Stellenbosch, *Garside* 678 (K): *C. A. Smith* 5147 (K): Somerset West, *Parker* 3635 (BOL, NBG): Sir Lowry Pass, *Adamson* 4043 (CT), 4894. 4896: *Compton* 3380 (NBG): 12330 (NBG): *Stokoe* (SAM): Van der Stel, *C. A. Smith* 5147 (PRE): Gordon's Bay, *Adamson* 4043: *Verreaux* (G).

CAPE. Cape Flats, *Ecklon* 280 (S): *Zeyher* 1083 (S): Tygerberg, *Drege* (K, S): Cape Town, *Young* (PRE): Table Mt., *Alexander* (K): *Bolus* 750 (BM): *Burchell* 9 (K): *Ecklon* (K): *Dümmer* (CGE): *Harvey* (K): *MacGillivray* 604 (K): *Moss* 7546, 7547, 7548 (BM): Kloof Nek, *Burchell* 284 (G, K): *Moss* 6063 (BM): Orange Kloof, *Wolley-Dod* 2223 (BM, BOL, K):

Lion's Head, *Kensit* (CT): *Moss* 7564 (BM): *Pappe* (S, SAM): Camps Bay, *Alexander* (K): *Harvey* (K): *Galpin* 4307 (PRE): *Marloth* 3276 (PRE): *Morris* 124 (NBG): *Salter* 291/17 (BM): Llandudno, *Compton* 16587 (NBG): s.n. (BOL): Devil's Peak *Adamson* 778 (PRE): *O. Kuntze* (K): *Page* (CT): *Rehmann* 1049 (BM, BOL): Mowbray, *Page* (CT): Camp Ground, *Bolus* 3275 (BOL): University Gds., *Levy's* 3557 (CT): Claremont, *Page* (CT): Kirstenbosch, *Esterhuysen* 12626 (BOL, PRE): Vlaggenberg, *Adamson* 2385 (BOL): *Wolley-Dod* 693 (K): Constantiaberg, *Wolley-Dod* 692 (BM, BOL, K): Chapmans Peak, *Wasserfall* 700 (NBG): Steenberg, *Bolus* 9350 (BOL, K): *Salter* 5723 (CT): Fishhoek, *Young* (PRE): Kommetje, *Compton* 12595 (NBG): *Levy's* (CT).

CALEDON. Sir Lowry Pass, *Adamson* 4896: Kogel Bay, *Esterhuysen* 13718 (BOL): Rooi Els, *Esterhuysen* 13320 (BOL): Grabouw, *Bolus* 4162 (BOL), 4164 (K): *Maguire* 1082, 1231 (NBG): Elgin, *Lewis* (SAM): Bot River, *Adamson* 4890: Hawston, *Adamson* 4892: Babylon's Tower, *Zeyher* 3124 (K, S, SAM): Shaws Mt., *Barker* 7193 (NBG): Hermanus, *Gillett* 525 (BOL): Mossel Riv., *Potts* 5001 (SAM): *Salter* 5164 (BM, K): Caledon, *O. Kuntze* (K): Genadendal, *Burchell* 7903 (K).

BREDASDORP. Cape Agulhas, *Leipoldt* 3708 (BOL): Elim, *Adamson* 4779: *Bolus* (PRE): Napier, *Adamson* 4772 (PRE).

SWELLENDAM. Mts., *Bowie* (BM).

Without locality:—*Commerson* (G): *Delessert* (G): *Drege* (BM, CGE): *Ecklon* s.n. (K), 280 (S): *Ecklon & Zeyher* (CGE, PRE): *Goodenough* (K): *Guthrie* 1150 (NBG): *Harvey* 470 (BM), 475, 499 (K), s.n. (BM, S): *Masson* (BM): *Sieber* (K): *Verreaux* (G): "Cape Town Flower Show", *Marloth* 9485 (PRE).

Var. *tenuifolia* *Adamson* var. nov.

A typo differt ramis tenuioribus, foliis saepissime oppositis tenuissimis integris vel basi solum minute denticulatis, floribus paucis, lobis calycis basi vix saccatis.

More slender and less woody than the typical form. Leaves very slender, 5—8 mm. long, mostly opposite, either entire or with minute teeth near the base. Flowers few. Calyx lobes enlarged but scarcely bulged at the base. Corolla usually deep blue. Valves in fruit slightly longer than the calyx lobes.

The type is *Adamson* 4911 (BOL).

Rocky or stony mountain slopes between 1,500—3,000 ft.

PAARL. Franschhoek Pass, *Adamson* 4911, 4912: *Gillett* 753 (BOL): *Leipoldt* 3708 (BOL): Hawaqua Peak, *Adamson* 4750, 4742A.

Var. **congesta** Adamson var. nov.

A typo differt caulibus erectis numerosis, foliis oppositis, floribus in apice congestis, ovarii parte superiore plano, valvis fructus lobis calycis distincte brevioribus.

In tufts, with many erect stems up to 15 cm. high, branched from the base. Leaves mostly opposite, 5—8 mm. long, toothed. Flowers crowded at the tips of the branches, in a spike 1—2 cm. long. Ovary flattened not conical on top. Fruit wider than long, the valves less than half as long as the spreading calyx lobes.

The type is *Adamson* 4812 (BOL).

Rare on sand over limestone near the coast.

SWELLENDAM. *Infanta*. *Adamson* 4812.

The plant described as *L. sessiliflora* var. *foliosissima* Sond. Fl. Cap. 3. 555. 1865, is uncertain. It was based on *Zeyher* 1083 (G) which is a scrap of a small prostrate plant with woody stem, and densely crowded fasciculate leaves which are toothed and hispid on the midrib below. The imperfect flowers appear to be solitary. The material is inadequate for determination. The plant does not seem to have been collected since.

2. **L. spicata** Buek in E. & Z. Enum. 374. 1837.

L. macrostachys A.DC. in DC. Prodr. 7. 787. 1839.

An erect woody shrublet up to 35 cm. high, with erect or ascending branches. Stems brown or purple, ridged, with hairs on the ridges. Leaves alternate, fasciculate, reflexed or recurved, oblong-lanceolate, acute, 4—8 mm. long, 1—1.5 mm. wide, rather thick, grooved above, keeled below, the edges thickened and with a few small obtuse teeth near the base. Inflorescence spike-like, often secund. 1—3 cm. long. Flowers sessile in the axils of small leaf-like bracts about 2 mm. long. Calyx lobes 1.5—2 mm. long, acute, keeled. Corolla white or yellow-white, 4—5 mm. long, the tube 1—1.5 mm. long, the lobes densely hispid on the back. Bases of the filaments oblong, acute, shortly ciliate. Style thickened in the upper half, coarsely hairy: stigma 3-fid. Ovary half-inferior, 3-chambered, the lower part rounded, about 1 mm. long, usually hispid. Valves in fruit slightly shorter than the calyx lobes.

The type is *E. & Z.* (Tulbagh Waterfall) S.

Rocky places on the western mountains.

VAN RHYNSDORP. Giftberg, *Drege* (G, S): *Esterhuysen* 22073 (BOL).

CLANWILLIAM. Cedarberg, *Drege* (G): Blaauwberg, *Drege* (BOL, S, K): Krakadouw Poort, *Esterhuysen* 12257 (BOL): *Stokoe* (SAM): Grass-ruggens, *Pillans* 8788 (BOL): Krakadouw Pk., *Pearson* 5312 (K): Greys Pass, *Pillans* 5182 (BOL): Algeria, *Bond* 1420 (NBG).

CERES. Schurftberg, *Schlechter* 10182 (BM, G, K, PRE).

TULBAGH. Waterfall, *E. & Z.* 2349 (S).

PIKETBERG. 24 Rivers, *Esterhuysen* 16619 (BOL, PRE).

WORCESTER. Hex River Mts., *Rehmann* 2609 (K): Kleinberg, *Esterhuysen* 9951 (BOL): Slanghoek Needle, *Esterhuysen* 17767 (BOL, PRE): Du Toits Kloof, *Drege* 6314 p. pte. (S).

PAARL. Drakenstein Mts., *Drege* (K, S).

Without locality:—*Drege* s.n. (G), 6315 (S).

3. ***L. rubioides*** A.DC. Monog. Camp. 116. 1830.

Main stems woody, most commonly prostrate, up to 30 cm. long, with few or many erect almost herbaceous branches. Young stems red-brown, ridged, hairy. Leaves mostly opposite, spreading, rather rigid, usually fasciculate, 4—8 mm. long, 1—3 mm. wide, acute, flat or more commonly folded upwards, rounded below, the edges with minute obtuse teeth. Lower leaves crowded, the upper close or distant. Flowers terminal and axillary, solitary, the terminal with pedicels 4—9 mm. long, the lateral about 2 mm. long. Pedicels and calyx hispidulous. Calyx lobes 1.5—3 mm. long, bulged on the back, often toothed, revolute in the older phases. Corolla white, 4—6 mm. long, hispidulous or rarely subglabrous, the tube as long as or longer than the calyx lobes. Bases of the filaments oblong-obovate, ciliate on the upper part. Ovary hispid, at least half superior, 5-, 4- or 3-chambered, the lower part distinctly wider than long. Style thickened below the stigma. Fruit 2—4 mm. diam., 1.5—2 mm. long: valves about as long as the calyx lobes.

The type is *Masson* s.n. in herb. BM.

Rock crevices, especially where moist or sheltered, on the western and south-western mountains.

Variable in habit, in the size and closeness of the leaves, and in the number of flowers. While extreme forms look distinct they are connected by all stages of intermediate. In collections this has been much confused with *L. spicata* and *L. oppositifolia*. From the former it is distinguished by the opposite leaves, pedicellate flowers, and less inferior ovary. From the latter by the stouter habit, thicker and involute leaves, short pedicels, hairy flowers and less inferior ovary.

VAN RHYNSDORP. Giftberg, *Drege* (G, S).

CLANWILLIAM. Duivelskop, *Stokoe* (SAM): Sneeuwberg, *Esterhuysen* 13821 (BOL).

CERES. Visgat, *Esterhuysen* 13418 (BOL, K, NBG, PRE), 13420 (BOL): Onderboskloof, *Esterhuysen* 14301 (BOL): Elandskloof, *Esterhuysen* 4200 (BOL): *Henderson* 2230 (NGB): Rosendalfontein, *Pillans* 9673 (BOL): Schurfteberg, *Adamson* 4915, 4920: Roodeberg, *Compton* 8430 (NGB): *Esterhuysen* 1473 (BOL, NBG, PRE): Baviaansberg, *Bond*

1445 (NBG): Mostertsberg, *Schlechter* 56 (BM, OGE, PRE): Ceres, *Bolus* 1078 (BM, BOL, G, K, SAM).

TULBAGH, Zuurvlaakte, *Stokoe* (SAM).

WORCESTER. Modenaarskop, *Stokoe* (SAM): Du Toits Peak, *Esterhuysen* 8575 (BOL): Du Toits Kloof, *Drege* (K, S).

PAARL. Suurvlaakte, *Adamson* 4331, 4333: Franschhoek Pass, *Gillett* 743 (BOL): *Stokoe* (SAM): Franschhoek, *Bolus* 5100 (BOL, K): *Schlechter* 97 (PRE), 9352 (G, K, PRE).

CALEDON. Villiersdorp, *Adamson* 4910: *Hafstrom & Acock* 1478 (PRE): *Salter* 5200 (BM, BOL, K): Viljoens Pass, *Adamson* 4909: Grabouw, *Stokoe* (SAM): Sir Lowry Pass, *Compton* 16896 (NBG): *Leighton* 922 (BOL): Palmiet River, *Esterhuysen* 12566 (BOL): *Levy's* 5341 (CT): *Schlechter* 600 (PRE), 7454 (BM, K): *Stokoe* 8659 (BOL), s. n. (SAM): Betty's Bay, *Compton* 21918 (NBG): Hermanus, *Gillett* 525 (BOL): Houwhoek, *Burchell* 8164 (K): Genadendal, *Bolus* 6950 (K): *Schlechter* 96 (PRE), 9857 (G, K): Sondereinde Mts., *Adamson* 4437: Nieuw Kloof, *Schlechter* 383 (PRE), 7527 (BM, BOL, K), 7529 (K).

Without locality:—*Auge* (BM): *Balston* (vicinity of Cape Town) (BM).

Var. *Stokoei* Adamson var. nov.

A typo differt caulibus suberectis, foliis alternis longioribus, floribus pedicellatis, calycibus, corollisque subglabris.

Taller and more erect than the typical form. Leaves mostly alternate, linear, up to 1.5 cm. long, involute or almost trigonous, minutely toothed. Flowers on pedicels 3—5 mm. long. Ovary, calyx and corolla subglabrous. Stigma 3-, 4- or 5-lobed.

The type is *Stokoe* (SAM, 63249) SAM.

Rare on mountains in the south-west.

PAARL. Franschhoek Mts., *Stokoe* (SAM).

CALEDON. Paardeberg, *Stokoe* (SAM) (type): Palmiet Riv., *Adamson* 4210: *Stokoe* (SAM): Grabouw, *Stokoe* (SAM): Modenaarskop, *Stokoe* (SAM):

4. *L. brachyphylla* Adamson sp. nov.

Suffrutex hispidula ramosa diffusa, ramis subdichotomis. Folia fasciculata parve rigida opposita vel superiora alterna. Flores pauci racemosi. Calyx hispida. Corolla alba tubo lobis subaequilongae. Ovarium fere superum hispidulum. Valvae fructus lobis calycis aequilongae.

Woody, harsh from hispid hairs. Stems many, erect or ascending, up to 45 cm. high, with forking branches. Leaves opposite or the upper alternate, fasciculate, short, 1—3 mm. long, spreading or partly reflexed, rigid and almost prickly, thick, concave above, often toothed near the base. Flowers few, in the uppermost axils, on pedicels about 2 mm.

long. Calyx lobes often reddish, hispid, acute, 1 mm. long. Corolla white, 4—5 mm. long, the lobes slightly hispid, about as long as the tube. Bases of the filaments oblong, densely ciliate. Style very slightly thickened at the top: stigma 3-fid. Ovary flattened, almost superior, 2—3 mm. diam., slightly bulged below the calyx lobes. Valves of the fruit as long as or very slightly longer than the calyx lobes.

The type is *Adamson* 4105 (BOL).

Rocky mountain slopes or occasionally on sand in the Cold Bokkeveld Mountains.

CERES. Cold Bokkeveld Mts., *Adamson* 4105, 4126, 4915, 4916, 4917, 4919, 5232-3: *Schlechter* 1770 (PRE), 10112 (BM, BOL, G, K, PRE).

5. *L. multicaulis* Adamson sp. nov.

L. rubioides affinis sed differt ramis erectis pernumerosis, foliis minutis, planis, floribus pedicellatis, in apice ramorum congestis, tubo corollae lobis aequilongo, ovario discoideo saepissime 4-loculare, valvis lobis calycis, longioribus.

Old stems woody, in the ground, the aerial herbaceous, erect, very numerous, 4—8 cm. high, in tufts or bunches. Leaves opposite, spreading or slightly recurved, 1—1.5 mm. long, rigid, triangular, the edges thickened, entire or with a few cilia-like teeth at the base. Flowers crowded at the tips, pedicels erect, 2 mm. long, each with a few pairs of very small leaves. Calyx lobes hispid, 1 mm. long, rigid, often toothed. Corolla blue or purplish, 4—5 mm. long, more or less hispid, the tube as long as the lobes and longer than the calyx lobes. Bases of the filaments narrowly elliptical, densely ciliate, the entangled cilia cohering. Style thickened at the top: stigma usually 4-fid. Ovary almost superior, discoid, usually 4-chambered, rarely 3 or 5. Valves in fruit longer than the calyx lobes.

The type is *Esterhuysen* 7427 (BOL).

A local endemic on the Cedarberg.

Related to *L. rubioides* but distinct in habit, the small leaves, cohering stamens and long valves in the fruit.

CLANWILLIAM. Pakhuis, *Esterhuysen* 7427 (BOL): Krakadouw, *Esterhuysen* 15014 (BOL): *Stokoe* (SAM): Heuning Vlei, *Esterhuysen* 21139 (BOL).

Series 2. *Parvifoliae* Adamson.

Tenuis subprostratae. Folia parva alterna reflexa. Flores longipedicellati. Tubus corollae brevissimus. Ovarium fere superum triloculare.

Slender, more or less prostrate, subherbaceous. Leaves small, thin, alternate, usually reflexed. Flowers on long slender pedicels. Corolla tube very short. Ovary almost superior, 3-locular.

Only species: *L. parvifolia* (Berg.) Adamson.

6. *L. parvifolia* (Berg.) Adamson J. S. Af. Bot. 8. 273. 1942. *L. oxycocoides* L'Herit. Sert. Ang. 1. t4. 1788. *Lobelia parvifolia* Berg. Desc. Pl. Cap. 345. 1767. *Campanula Ottoniana* R. & S. Syst. 5. 113. 1819.

Slender, sprawling, or prostrate, growing in tangles. Stems brown, very shortly hairy, up to 45 cm. long. Leaves alternate, distant, reflexed, ovate, oblong, or ovate-lanceolate, 3—6 mm. long, 1—2 mm. wide, flat, rather thin, acute, the edges slightly thickened and revolute, entire or with 1—2 small teeth at each side. Leaves not fasciculate. Flowers terminal on the branches, solitary or in lax groups of 2—3. Pedicels very slender, 0.5—1.5 cm. long. Calyx lobes 1.5 mm. long, linear, more or less keeled at the base. Corolla white, with pink or purple lines on the back, less often uniformly coloured, the tube very short. Bases of the filaments oblong, sub-obtuse, finely ciliate. Ovary almost superior, the lower part less than 1 mm. long, rounded or very slightly pointed at the base. Style slightly thickened below the stigma. Fruit 3-chambered, 2 mm. diam. valves shorter than the calyx lobes but longer than the lower part.

Sheltered places among rocks on mountains.

Variable in the size of the leaf and the length of the internodes. Specimens have been seen with subopposite leaves. Plants from inland stations have smaller and harder leaves which are more reflexed.

CAPE. Cape Flats, *Harvey* 561 (K): Table Mt., *Bolus* 3880 (BOL): *Compton* 10319 (PRE): *Ecklon* 151 (BM, p. pte, K): *Ecklon & Zeyher* 151 (BOL, K): 2360 (BOL, SAM), s.n. (SAM): *Gillett* 774 (K): *Harvey* (K): *MacGillivray* 611 (K): *Moss* 7544 (BM): *Pappe* (SAM): *Rehmann* 767 (BOL): *Verreaux* (G): *Young* (PRE): *Zeyher* 4893 (BOL, SAM), s.n. (S): Disa Gorge, *Compton* 21471 (NBG): Devils Peak, *Ecklon & Zeyher* 2360 (SAM): *Esterhuysen* 10052 (BOL): *Rehmann* 1047 (BM): Hout Bay, *Harvey* 260 (K): Constantiaberg, *Wasserfall* 148 (NBG): Kirstenbosch, *Moss & Rogers* 1703 (BM): Muizenberg, *Adamson* 1261 (PRE): *Bolus* 3880 (BM, K, PRE): *Galpin* 12554 (PRE): *Guthrie* 1429 (CT): *Harvey* (K): *Wallich* 391 (BM), s.n. (BM): Kalk Bay, *Adamson* 4469: *Wolley-Dod* 696 (BOL, K), 698 (BOL, K): Simonstown, *Adamson*, 2334 (BOL): *Wright* (K): Red Hill, *Adamson* 4926: *Penfold* (NBG): Klaver Valley, *Salter* 291/19 (BM): Buffels Bay, *Compton* 6859 (NBG).

STELLENBOSCH. Jonkershoek, *Esterhuysen* 8793 (BOL), 11450 (BOL, NBG, PRE): *Rodin* 3243 (BOL, PRE): Triplets, *Esterhuysen* 9795 (BOL).

CALEDON. Hottentots Holland, *Ecklon & Zeyher* (G): Somerset Sneeuwkop, *Ecklon & Zeyher* (S): Rooi Els, *Stokoe* (SAM): Houwhoek, *Guthrie* 2274 (NBG): Caledon, *Gillett* 878 (BOL): Genadendal, *Schlechter* 95 (PRE), 3580 (PRE), 9810 (BOL, G. K. PRE): Greyton, *Elbricht* (PRE): River Sondereinde, *Ecklon* (S): *Schlechter* 9398 (PRE).

PAARL. Dal Josaphat, *Tyson* (BOL): Drakenstein Mts., *Drege* 6306 (G, K, S), 6315 (G).

RIVERSDALE. Riversdale, *Muir* 326 (PRE).

OUTDSHOORN. Swartberg Pass, *Adamson* 4360: *Pocock* S, 117 (BOL).

Without locality:—*Burmah* (G): *Ecklon & Zeyher* 2366 (G): *Forsyth* (K): *Goodenough* (K): *Harvey* 260 (BM), 12121 (BM): *Koenig* (BM): *Lehmann* (CGE): *Otto* (BM): *Masson* (BM): *Tyson* (SAM): *Ventenat* (G) *Wallich* (G, K).

“Cape Town Flower Show” *Marloth* 9484 (PRE).

Series 3. ***Oppositifoliae*** Adamson ser. nov.

Subherbaceae tenues subprostratae. Folia opposita plana. Flores pedicellati. Corollae tubus lobis calycis subaequilongus. Ovarium inferum triloculare.

Slender sprawling or prostrate subherbaceous plants. Leaves opposite, or the upper sometimes alternate, flat. Flowers few, pedicellate. Corolla tube as long as the calyx lobes. Ovary 3-chambered, inferior, rounded at the base.

KEY TO THE SPECIES.

- | | |
|--|----------------------|
| 1. Leaves linear or linear-lanceolate: flowers on long pedicels. | |
| 2. Leaves soft, often reflexed: pedicels branched: ovary glabrous. | <i>oppositifolia</i> |
| 2. Leaves wiry, spreading: flowers solitary: ovary hairy | <i>tenuis</i> |
| 1. Leaves broad-oval, reflexed: flowers terminal on short pedicels | <i>cordata</i> |

7. ***L. oppositifolia*** A.DC. Monog. Camp. 115. 1830. *L. capillaris* Buek in E. & Z. Enum. 372. 1837. p.pte.

Diffuse, decumbent or prostrate. Stems 10—30 cm. long, thin, wiry, branched, forming loose tangles. Stems red or brown, glabrous or with short hairs in lines. Leaves opposite or the upper partly alternate, not fasciculate, scattered, linear-lanceolate, 0·4—1·3 cm. long, 1—2 mm. wide, flat or slightly concave above, the edges more or less thickened, entire or with occasional minute teeth. Leaves spreading or partly reflexed, often shorter than the internodes. Flowers pedicellate, in the uppermost axils: pedicels slender, 0·3—2 cm. long, simple or branched. Bracts on the pedicels very small, often not opposite. Calyx and ovary glabrous. Calyx lobes 1—2 mm. long, acute or shortly hair-pointed, sometimes minutely toothed. Corolla white, pink or purplish outside, 4—8 mm. long, the tube about 2 mm. long, the lobes minutely ciliate. Bases of the filaments oblong, acute or acuminate or rarely truncate-mucronate. Style purple, thickened at the top. Ovary glabrous, inferior, hemispherical, flattened, or even retuse at the base, as wide as long. Fruit with distinct raised ribs, the valves as long as or slightly shorter than the calyx lobes.

The type is *Burchell* 606 in herb. DC. (G).

Sheltered places among rocks on mountains in the south-west.

Sonder (Fl. Cap. 3. 563. 1865) quotes *L. muscosa* Link Enum. 1. 217. 1821 and *L. lanceolata* Link l.c. as synonymous with this species. A. De Candolle regarded them as belonging to *L. parvifolia*. Both are inadequately described. The only specimen in Herb. Sonder labelled *L. muscosa* (E. & Z. 2361) is certainly *L. oppositifolia*. In herb. Sonder there are two sheets with the ticket *Drege* 6314, of which one is certainly this species and identical with specimens with this ticket in herb. Kew, the other belongs to *L. spicata*.

CLANWILLIAM. Lamberts Bay, *Pole Evans* 61 (PRE).

PAARL. Haalhoek Spitzkop, *Esterhuysen* 7707 (BOL): Hawaqua Peak, *Adamson* 4747, 4748: *Esterhuysen* 21186 (BOL).

WORCESTER. Du Toits Kloof, *Drege* 6314 (G, K, S p.pt).

STELLENBOSCH. Guardian Peak, *Adamson* 3652.

CAPE. Doornhoogde, *Ecklon & Zeyher* 2361 (S, SAM): Table Mt., *Burchell* 606 (G, K): *Ecklon & Zeyher* 2362 (S, SAM): Groote Kop, *Esterhuysen* 10060 (BOL, NBG): Devils Peak, *Wolley-Dod* 1043 (BOL, K): Constantiaberg, *Adamson* 4464 : *Compton* 16947 (NBG): Noordhoek Mts., *Adamson* 2432 (CT): *Salter* 291/21 (BM): Simonstown Mts., *Pillans* 4324 (K).

CALEDON. Sir Lowry Pass, *Adamson* 4897: *Stokoe* (SAM): Palmiet River, *Esterhuysen* 12566 (BOL, PRE): Genadendal, *Ecklon & Zeyher* 2342 (S, SAM): *Zeyher* (SAM).

Without locality:—*Harvey* 12117, 12118 (BM): *Masson* (BM): *Ventenat* (G).

8. *L. tenuis* *Adamson* J. S. Af. Bot. 7. 202. 1941.

Stems many, procumbent or ascending, wiry, up to 40 cm. long, branched, woody at the base only, the younger reddish. Leaves mostly opposite, wiry, linear, 0.5—1.3 cm. long, spreading or falcate, concave above, minutely toothed, the lower sometimes fasciculate. Flowers axillary, solitary, on roughly hairy pedicels 0.5—1.5 cm. long. Calyx lobes 2 mm. long. Corolla white, purple or brown-purple outside, glabrous, 4—6 mm. long, the tube 1—1.5 mm. long. Bases of the filaments obtusely lozenge-shaped, rather densely ciliate. Style blue or purple, gradually thickened above. Ovary hemispherical, covered with white hairs except for prominent green ridges. Valves shorter than the calyx lobes.

The type is *Adamson* 1684 (BOL).

A local endemic on sand on hills near Simonstown.

CAPE. Red Hill, *Adamson* 1683 (BM), 1684 (BOL, CT, PRE), 2336 (BOL, CT), 4927 (PRE): *Levy's* 5615, 5626 (CT): *Salter* 5704 (BOL, K): North-west of Simonstown, *Adamson* 4759, 4760, 4761.

9. ***L. cordata*** Adamson sp. nov.

Decumbens ramosus. Folia opposita non fasciculata congesta ovato-cordata. Flores pauci terminales pedunculati. Corolla calyci duplo longior, tubo breve. Ovarium obconicum, valvis lobis calycis aequilongis.

Slender, prostrate or decumbent, much branched, forming close masses. Stems woody at the base only, up to 25 cm. long. Leaves not fasciculate opposite, ovate, about 3 mm. long, 2—2.5 mm. wide, acute, cordate at the base, entire, thickened at the edges, flat or very slightly concave above, usually reflexed, often crowded and overlapping. Flowers 1—3, in the uppermost axils: pedicels hairy, erect, 3—6 mm. long. Calyx lobes 2.5 mm. long, acute, with thickened edges, revolute in the later phases. Corolla white, deep blue or purple outside, about 7 mm. long, the tube less than 1 mm., the lobes gradually narrowed to the cucullate tip. Bases of the filaments as broad as or broader than long, obtusely 3-lobed, very shortly ciliate. Ovary about half inferior, obconical, shortly pubescent. Style not thickened: stigma 3-fid. Fruit pointed at the base, 2 mm. long, the valves about as long as the erect calyx lobes, longer than the lower part.

The type is *Esterhuysen* 4732 (BOL).

Rocks on mountains near the central south coast.

A very distinctive species. In the shape of the reflexed leaves, and the short corolla tube it approaches series *Tenellae* but the herbaceous habit and opposite leaves place it here.

UNIONDALE. Kamanassie Mts., *Compton* 10550 (NBG): *Esterhuysen* 18420 (BOL, PRE): *Zinn* (SAM): *Mannetjeberg*, *Esterhuysen* 4732, 4733 (BOL).

PRINCE ALBERT. Swartberg, *Esterhuysen* 4514 (BOL).

A specimen, *Schlechter* 7529 (G), from Nieuwkloof, Uniondale, is probably this species but much taller, with toothed leaves, short pedicels, and a hispid ovary.

Series 4. ***Denticulatae*** von Brehm. l.c.

Annuals or herbaceous perennials. Stems unbranched or branched from the base. Leaves alternate, linear, flat, denticulate. Inflorescence branched, with small leaf-like bracts. Corolla tube about as long as the calyx lobes. Ovary inferior, 3-chambered.

KEY TO THE SPECIES.

1. Leaves all similar: flowers on short leafy branches *caledonica*
1. Upper leaves smaller and more distant than the lower: flowers on almost leafless branches.
2. Leaves with small lateral teeth: ovary rounded, as wide as long.
3. Lower leaves crowded, ascending: calyx lobes toothed: valves shorter than the calyx lobes *denticulata*

3. All the leaves scattered and spreading; calyx lobes thick,
entire; valves about as long as the calyx lobes *namaquana*
2. Leaves with prominent almost spinous teeth; ovary
obconical; small plant *albicaulis*

10. *L. denticulata* (Burch.) Sond. Fl. Cap. 3. 559. 1865. *Campanula denticulata* Burch. Trav. 1. 538. 1823. *Wahlenbergia denticulata* A.DC. Monog. Camp. 152. t16. 1830. *L. capillaris* Buek in E. & Z. Enum. 372. 1837. p.pt. *Wahlenbergia spinulosa* Engl. Bot. Jahrb. 10. 271. 1889. *W. Dinteri* Engl. Pflzw. Afr. 1. 573. 1910. *non* v. Brehm. *L. Dinteri* Engl. l.c.

Herbaceous or woody at the base only. Stems many, branched in the upper parts, 10—35 cm. high, ridged, hairy when young. Leaves alternate, linear or linear-lanceolate, 0·5—1·5 cm. long, up to 0·3 cm. wide but often less than 1 mm., flat, the edges thickened, with opposite pairs of acute teeth. Lower leaves crowded, ascending, sometimes fasciculate, the upper shorter and more distant. Flowers pedicellate, in a loose cymose panicle: pedicels 0·4—1 cm. long. Calyx lobes 2—3 mm. long, toothed at the edges. Corolla white, blue or blue-purple outside, 4·5—5 mm. long, the tube about as long as the lobes and as long as the calyx lobes. Bases of the filaments broadly rhombic or obtusely cruciform, densely but shortly ciliate. Style hairy, distinctly thickened in the upper half. Ovary inferior, 1·5 mm. long, 1 mm. diam., rounded at the base. Fruit hemispherical, the valves about half as long as the spreading calyx lobes.

The type is *Burchell* 2302 (K).

Rocky or stony places in the drier parts of the summer rainfall area. Very variable in size and amount of branching. *Wahlenbergia spinulosa* Engl. seems to be only a hairy form. The sheet, *Ecklon & Zeyher* 2342, in Sonder's herbarium which carries the MS description of *L. capillaris* is not this species but *L. oppositifolia*.

CAPE:

MAFEKING. Mafeking. *F. Bolus* 6456 (K, NBG): Maribogo, *Burt-Davy* 11023 (PRE).

KURUMAN. Kuruman, *Bolus* 2534 (BOL, SAM): Pnail, *Acock* 710 (PRE), 1576 (K, PRE): Takim, *Burchell* 2302 (G, K, PRE).

VRYBURG. Vryburg, *Acocks* 12578 (K): *Henrici* 177¹ (PRE): Tigerkloof, *Brueckner* 454 (PRE): Armoedsvlakte, *Foley* 2781 (PRE): Welgelen, *Burt-Davy* (PRE): Hansforth, *Mogg* 8357 (PRE).

BARKLY WEST. Daniels Kuil, *Esterhuysen* 2059 (BOL).

KIMBERLEY. Kimberley, *Moran* (BOL, K): *Wilman* (PRE).

HAY. Witsands, *Acocks* 2166 (K): *Esterhuysen* (BOL): Rietfontein, *Burchell* 2000 (K): Dunmurray, *Wilman* 2320 (K).

MURRAYSBURG. Murraysburg, *E. P. Phillips* (SAM).

- MIDDELBURG. Bangor Farm, *H. H. Bolus* (BOL).
ALBERT. Burgersdorp, *Cooper* 2674 (K).
ALIWAL NORTH. Orange River, *Gerstner* 260 (PRE).
GLEN GREY. Kliplaat River, *Drege* (K, S); *Ecklon & Zeyher* 2378 (SAM).
QUEENSTOWN. Shiloh, *Drege* (G).
CATHCART. Cathcart, *Rogers* 12671 (BM).
ALBANY. Highlands, *Hutchinson* 1508 (BOL, K, PRE).
BEDFORD. Bedford. *Hutton* (K).
UITENHAGE. Swartkops Riv., *Zeyher* 466 (BM, BOL, SAM), 3139 (S, SAM), 3199 (BOL).
CALEDON. Genadendal, *Pappe* (SAM); *Zeyher* 4 (SAM).
NATAL:
DURBAN. Durban, *Krauss* 102 (G); Umlaas River, *Wood* 316 (SAM); s.l. *Krauss* (BM).
O.F.S.:
FAURESMTIH. Fauresmith, *Henrici* 2571 (PRE); *Kies* 221 (PRE); *Marais* 231 (PRE); *Verdoorn* 968, 1210, 2352 (PRE).
BOSHOF. Smitskraal, *Burt-Davy* 10136 (PRE).
BLOEMFONTEIN. Bloemfontein, *Potts* s.n. (BOL), 2621, 2622 (BM), 13316 (K); *Rehmann* 3872 (K); Hillandale, *Wasserfall* 853 (NBG).
KROONSTADT. Kroonstadt, *Pont* 251 (PRE).
ROUXVILLE. Orange River, *Zeyher* 117.11 (S).
SENEKAL. Senekal, *Acocks* 12502 (PRE).
HEILBRON. Heilbron, *Flanagan* 1477 (BOL, PRE).
THABANCHU. Thabanchu, *Burke* (K).
TRANVAAL:
CHRISTIANA. Christiana, *Burt-Davy* 12942 (PRE); Kameelpan, *Theron* S 663 (PRE).
BLOEMHOF. Bloemhof, *Burt-Davy* 4376, 14480 (PRE).
WOLMARANSSTADT. Boskuil, *Sutton* 243 (PRE); Wolmaransstadt, *Liebenburg* 3004 (PRE).
POTCHEFSTROOM. Tarental, *Louw* 1094 (PRE).
VEREENIGING. Houtkop, *Mogg* 21033 (BOL).
PRETORIA. Pretoria, *Young* (PRE); Kruidsruck, *Connell* 37 (PRE).
RUSTENBURG. Rustenburg, *Rogers* 22515 (PRE).
POTGIETERSRUST. Potgietersrust, *Galpin* 9020 (PRE).
MARICO. Malermani, *Beyer* (PRE).
PIETERSBURG. Zoetmakaar, *Rogers* 22525 (PRE); Marabastad, *Schlechter* 5346 (PRE).
LYDENBURG. Lydenburg, *Barnes* 398 (K).

NELSPRUIT. Nelspruit, *Anderson* (K): *C. A. Smith* 3544 (PRE).

BASUTOLAND. Leribe, *Dieterlen* 332 (PRE): Mafeteng, *Dieterlen* 1292 (PRE): Mamathes, *Guillermot* 372 (PRE): s.l. *Page* (BOL).

Without locality:—*Drege* s.n. (SAM), 4005 (S), 6300 (G): *Ecklon & Zeyher* 2378 (G).

Var. *transvaalensis* Adamson var. nov.

A typo differt caulibus longioribus apice solum ramosus, foliis majoribus, inflorescentiae ramis numerosis ascendentibus, fructibus basi sub-complanatis, valvis lobis calycis aequilongis.

Much taller, 25—50 cm. Stems almost woody, unbranched except in the inflorescence region. Leaves 1—2.5 cm. long, often appressed, the lower crowded. Inflorescence with many ascending branches. Calyx lobes with minute or no teeth. Fruit almost as wide as long, more or less flattened at the base, distinctly ribbed: valves about as long as the calyx lobes.

The type is *Moss* 9515 (BOL).

Grassveld, especially in the eastern parts.

CAPE:

KIMBERLEY. Warrenton, *Rogers* 24920 (PRE).

HAY. Witsands, *Acocks* 2160 (PRE).

PORT ST. JOHNS. Port St. Johns, *Wager* (PRE).

NATAL:

PINETOWN. Umlaas Riv., *Wood* 1878 (BM, K): Pinetown, *Acocks* 10868 (PRE).

DURBAN. Durban, *Krauss* 103 (K): "Natal coast", *Sutherland* (K): s.l. *Gerrard* 1501 (K).

O.F.S.:

ROUXVILLE. Caledon Riv., *Zeyher* s.n. (SAM).

TRANSSVAAL:

SCHWEITZER REINEKE. Amalia, *Acocks* 12518 (PRE).

BLOEMHOF. Bloemhof, *Acocks* 12584 (PRE).

LICHTENBURG. Lichtenburg, *Louw* 1094 (PRE): Karannasfontein, *Rogers* 20628 (PRE).

RUSTENBURG. Daspoort, *Liendertz* 581 (PRE).

PRETORIA. Arcadia, *C. A. Smith* (PRE): Fairy Glen, *Codd* 2590 (PRE): *Munro* 1943, s.n. (PRE): *Repton* 1689 (PRE): *van Elden* (PRE): Irene, *Rogers* 23832 (PRE): Uitpoortjie, *Young* (PRE): Aapias Riv., *Bolus* 10892 (BOL, K): *Burke* (K): Dalepoort, *Repton* 377 (PRE).

JOHANNESBURG. Johannesburg, *Moss* 9515 (BOL).

PIETERSBURG. Pietersburg, *Bolus* 10892 (BOL, K, PRE), 13318 (BOL, K): Marabastad, *Schlechter* 4393 (BOL): Zwartfontein, *Burt-Davy* 14049 (PRE).

LYDENBURG. Witkop, *Louw* 1327 (PRE): Sukukini, *Barnard* 398 (PRE).

NELSPRUIT. Pretorius Kop, *Codd & de Winter* 4915 (PRE): *van der Schyff* (PRE).

11. *L. caledonica* Sond. Fl. Cap. 3. 559. 1865. *L. Dieterlenii* Phill. Ann. S. Afr. Mus. 16. 178. 1917.

An erect or sprawling usually hairy shrublet, 40—50 cm. high. Stems branched from the base, densely clothed with leaves all along. Leaves ascending, crowded, fasciculate, linear, flat, rather rigid, 0·7—1·5 cm. long, about 2 mm. wide, often glaucous below, the edges thickened, revolute and strongly toothed. Inflorescence with ascending branches, either short or up to 6 cm. long. Bracts leaf-like, as long as or longer than the flowers except at the extreme tips. Pedicels 2—3 mm. long. Calyx lobes 2—3 mm. long, acute, thickened and revolute at the edges, toothed especially at the base. Corolla white or very pale blue, 6—7 mm. long, the tube 1·5 mm., more than half as long as the calyx lobes. Bases of the filaments narrow-spathulate-rhombic, densely ciliate and often coherent. Ovary almost inferior, turbinate below, with 5 projecting ribs. Fruit 2 mm. long and about as wide, the valves half to three-quarters the length of the calyx lobes.

The type is *Zeyher* (Caledon River), (S).

Rocky places in the upper grassveld.

Easily recognised by the hard toothed leaves and leaf-like bracts. The type specimen is poor and in fruit but certainly identical with the type of *L. Dieterlenii*, *Dieterlen* 528.

O.F.S.:

HARRISMITH. Harrismith, *Wood* 4815 (BOL, K, PRE, SAM).

ROUXVILLE. Caledon River, *Zeyher* (S).

FICKSBURG. Ficksburg, *Fawkes* 129 (NBG).

FOURIESBURG. Wyndford, *Gemmell* 5814 (PRE).

BETHLEHEM. Bethlehem, *Potgieter* (PRE).

TRANSVAAL:

JOHANNESBURG. Johannesburg, *Bryant* D177 (PRE): *Rand* 1252 (BM): Witwatersrand, *Hutton* 881 (BOL, SAM): Rooikop, *Galpin* 7145 (PRE): Roodepoort, *Moss* 7438, 7439 (BM): Kliptown, *Moss* 14095 (BM).

KRUGERSDORP. Witpoortjie, *Murray* 544 (PRE).

LICHTENBURG. Lichtenburg, *Leemann* 66 (PRE).

POTCHEFSTROOM. Rysmienbult, *Louw* 1380 (PRE).

BASUTOLAND. Leribe, *Dieterlen* 528 (K, PRE, SAM), 1980 (K): s.l. *Page* (BOL).

Without locality:—*Cooper* (K): *Zeyher* 1058 (BM, K), 1059 (BM).

N.B.—A ticket, *Zeyher* 1064, has been attached, evidently in error, to a specimen of this species in herb. Kew (cf. *L. adpressa*).

12. *L. namaquana* Sond. Fl. Cap. 3. 556. 1865.

Annual. Stems many from the root, up to 30 cm. high, not much branched, the younger covered with short hairs. Leaves alternate, not fasciculate, scattered, linear, 0.5—1 cm. long, less than 1 mm. wide, the edges with a few small teeth. Upper leaves smaller and more distant. Flowers solitary or in groups of 2—3, on pedicels 4—12 mm. long. Calyx lobes about 2 mm. long, ciliate, entire, rather thick. Corolla blue or white, 6—8 mm. long, the tube as long as the calyx lobes, the lobes very narrow. Bases of the filaments broadly rhombic, as wide as long, shortly ciliate. Style hairy, thickened at the top. Ovary inferior, densely covered with short white hairs except for green veins. Fruit glabrescent, a little longer than wide: valves as long as the calyx lobes.

The type is *Whitehead* in herb. T.U.C., Dublin.

Sand at low altitudes in Namaqualand.

A short-lived ephemeral. Like *L. denticulata* but smaller, with smaller less close and less toothed leaves, and thick entire calyx lobes.

NAMAQUALAND. Schaape River, *Bolus* 9417 (BOL): Steinkopf, *Taylor* 1201 (BOL): Spektakel, *Bolus* 9640 (BM, K): Modderfontein, *Whitehead* (S).

Without locality:—*Bolus* 9408 (BM, K): *Scully* 145 (BM).

13. *L. albicaulis* Sond. Pl. Cap. 3. 556. 1865. *Lobelia cinerea* Thunb. Prodr. Pl. Cap. 40. 1794.

Like *L. namaquana* but shorter. Stems white or pale-coloured. Leaves attenuate at the base, linear, flat, 0.4—1.5 cm. long, 0.2—0.4 cm. wide, the edges thickened and with pairs of narrow acute projecting teeth. Flowers sessile, axillary, solitary. Calyx lobes toothed. Corolla white, 4—5 mm. long, the tube half as long as the lobes, shorter than the calyx lobes. Ovary inferior, obconical, hairy.

A little known species which has not been collected for over 100 years. The only specimen in herb. Sonder (S), *Wyley* from Namaqualand, is of a small stemless plant with a tap root.

Series 5. *Paniculatae* Adamson ser. nov.

Herbae diffusae. Folia linearia distantia. Flores paniculati. Ovarium inferum, basi acutum, valvis brevibus.

Diffuse herbs with small distant leaves. Flowers in a branching panicle. Corolla tube short. Ovary inferior, 3-chambered, pointed at the base. Valves short, obtuse.

A series distinctive in habit. Allied to and possibly derived from series *Denticulatae*.

Only species, *L. paniculata*.

14. ***L. paniculata*** Sond. Fl. Cap. 3. 560, 1865.

Stems many from a woody base, 20—40 cm. long, green, wiry, glabrous, distinctly ridged. Leaves alternate, spreading, linear, revolute-subulate, entire, the lower 1—2 cm. long, the upper shorter and distant. Flowers in a lax panicle with divaricate branches. Bracts minute. Calyx lobes narrow, acute, 2—3 mm. long. Corolla white, the tube 1—1.5 mm. long, the lobes at least three times as long. Bases of the filaments triangular, acute, about as long as the calyx lobes, ciliate. Style longer than the corolla: stigma lobes 3, elongated. Ovary inferior, glabrous, top-shaped. Fruit 3-chambered, with obtuse valves about as long as the calyx lobes.

The type is *Burke & Zeyher* 1067 in herb. Sonder (S).

Rocky places on mountains in the Transvaal.

Easily distinguished by the green wiry stems, small distant leaves, lax inflorescence, and ovary pointed at the base. Not closely allied to any other. There is a note on a cover in herb. Kew suggesting the transfer to the genus *Cephalostigma* A.DC. but, though there is a similarity in habit, the structure of the stigma is against this.

KRUGERSDORP. Rarlton, *Jenkins* (K, PRE).

JOHANNESBURG. Johannesburg, *Kolbe* (BOL): *Young* 753 (PRE): Parktown, *Moss* 750, 973 (BM): *Rand* 1293 (BM): Roodepoort, *Mogg* 20238 (BOL, PRE): Northcliff, *Gilliland* (PRE): Modderfontein, *Gilliland* (PRE).

PRETORIA. Pretoria, *Murray* 710 (PRE): Hoornsnek, *Codd* 6479 (PRE).

WATERBERG. Nylstroom, *Galpin* 13276 (PRE).

RUSTENBURG. Magaliesberg, *Burke & Zeyher* 1067 (BM, BOL, G, K, S): *Obermeijer* 414 (PRE): *Repton* 439 (K, PRE): Breedstruck, *Codd* 2688 (PRE): Witpoortjie, *Moss* 3434 (BM): Hartebeestpoort Dam, *Fairall* 1607 (NBG): *Young* (PRE): Crocodile River, *Burt-Davy* 203 (BOL, K): *Rogers* 14536 (PRE): Daspoort, *Obermeijer* 3 (PRE).

PIETERSBURG. Blaauwberg, *Leemann* 101 (PRE).

LETABA. Shilobane, *Junod* 1066 (PRE).

PILGRIM'S REST. Mariepskop, *Codd* 7810 (PRE).

BELFAST. Badplaats, *Galpin* 13276 (K, PRE).

ERMELO. Ermelo, *Burt-Davy* 989 (PRE).

Ser. 6. ***Longifoliae*** von Brehm. l.c.

Shrublets. Stems unbranched or branched from the base. Leaves usually alternate, often not fasciculate. Flowers in a terminal panicle either raceme-like or spike-like. Corolla tube short. Ovary inferior, 3- or 2-chambered.

The type species is *L. longifolia* A.DC.

KEY TO THE SPECIES.

1. Inflorescence with bracts smaller than the leaves: leaves spreading or recurved.
2. Leaves spreading or ascending: flowers white: ovary inferior: decumbent *longifolia*
2. Leaves often recurved: flowers blue: ovary half-inferior: erect or sprawling.
3. Leaves opposite: inflorescence spikelike: ovary hairy: valves shorter than the calyx lobes *stricta*
3. Leaves alternate: inflorescence branched: ovary subglabrous: valves longer than the calyx lobes *multiflora*
1. Inflorescence with bracts like the leaves: leaves ascending, usually appressed.
4. Stems stout: leaves revolute at the edges only: flowers white *axillaris*
4. Stems slender: leaves revolute to the midrib: flowers blue *unidentata*

15. *L. longifolia* A.DC. Monog. Camp. 108. 1830. *L. erecta* Good J. Bot. 62. 48, 1924. p.pte.

Stems woody, decumbent, 15—40 cm. long, branched mostly from the base, the younger covered with very short hairs. Leaves linear, ascending, rather crowded, flat or concave above, bulged or obtusely keeled below, toothed on the edges especially near the base, the lower 1—3 cm. long, alternate, often fasciculate, the upper 0.5—1 cm. long, more distant, often partly opposite, spreading. Flowers pedicellate, commonly in a narrow raceme-like panicle either close or lax. Pedicels slender, 0.3—2.5 cms long: bracts usually shorter than the pedicels. Calyx lobes 1.5—2 mm, long, acute, bulged on the back, the edges minutely toothed and revolute at the fruiting stage. Corolla 6—8 mm. long, white, fading to yellowish, often with blue streaks outside: tube shorter than the calyx lobes: lobe, coarsely hairy on the back. Bases of the filaments oblong or oblong-rhombic, acute, densely but shortly ciliate at the top. Style blue but white at the top: stigma 2- or 3-fid. Ovary inferior, hemispherical, usually covered with short spreading hairs, 3- or 2-chambered. Valves half or less as long as the calyx lobes.

The type is *Ecklon* s.n. in herb. Dunant (G).

Lower mountain slopes and flats in the south-west.

Variable in size and in the form of the inflorescence. This is often branched in the later stages. Plants growing in dense vegetation may have solitary flowers on long slender pedicels.

MALMESBURY. Hopefield, *Leighton* 2449 (BOL, PRE): Mamre, *Salter* 2990 (BOL).

CAPE. Kraaifontein, *Young* (PRE): Cape Flats, *Ecklon* 78 (G, K), s.n. (S): *Pappe* (SAM): *Rehmann* 1947 (BM): Doornhoogte, *Ecklon & Zeyher* 2341 (S, SAM): *Wolley-Dod* 694 (BM, K): Maitland, *Guthrie* 754 (CT): Rondebosch, *Burchell* 177, 722 (K): Claremont, *Schlechter* 181 (K): Wynberg, *Wallich* 421 (BM): *Schlechter* 48 (CGE): Bergvliet, *Salter*

6528 (BOL): Tokai, *Levyms* 5612 (CT): Lakeside, *Moss & Rogers* 1648 (BM): Silvermine, *Compton* 16615 (NBG): Klaver Valley, *Moss* 7498 (BM): *Salter* 291/18 (BM): Klaasjagersberg, *Wolley-Dod* 303 (BOL, K): Brightwater, *Salter* 9026 (NBG, SAM): Schusterskraal, *Barker* 4007 (NBG): Witsands, *Gillett* 1512 (BOL): Theefontein, *Compton* 21848 (NBG): Smitswinkel, *Adamson* 5227: *Compton* 17927 (NBG): *Galpin* 12768 (K, PRE): Patrys Vlei, *Compton* 21187 (NBG): Paulsberg, *Salter* 5731 (CT): Platboom, *Levyms* (CT): Smiths Farm, *Adamson* 717 (BOL), 909 (CT): *Compton* 6065, 22702 (NBG): Cape Point, *Goulimis* (NBG).

STELLENBOSCH. Brackenfel, *Compton* 10119 (NBG): *Esterhuysen* 4056 (BOL): Eerste River, *Zeyher* 3123 (S, SAM).

CALEDON. Grabouw, *Bolus* 4165 (BOL): Palmiet River, *Guthrie* (PRE): *Galpin* 12913 (PRE): Hermanus, *Galpin* 12912 (K, PRE): Mossel River, *Potts* 5043 (SAM): Stanford, *Schlechter* 1994 (PRE), 10429 (BM, BOL, G, K, PRE).

Without locality:—*Ecklon* (G): *Harvey* 438 (BM), 458 (BM, K), 500 (BM, K): *Wallich* (K): "Cape Town Flower Show", *Marloth* 9486 (PRE).

Var. **corymbosa** Adamson nom. nov. *L. erecta* Good J. Bot. 62. 48. 1924. p.pt. *L. longifolia* var. *oppositifolia* Sond. Fl. Cap. 3. 558, 1865. p.pt.

Smaller and more erect than the typical form. Stems many, 12—30 cm. high, woody at the base. Leaves spreading, rather rigid, about 1 cm. long, often partly opposite, the older with axillary fascicles. Inflorescence corymbose, the branches erect or ascending, the outer 2—5 cm. long with distant very small leaves. Pedicels 1—2 cm. long, usually 1-flowered, shortly hairy, rather rigid.

The type is *Moss* 7499 (BM).

A local endemic confined to a few sandy areas in the southern Cape Peninsula.

This variety has been named *L. erecta* Good in collections but the type of that species, *Moss* 7498 (BM), is quite inseparable from *L. longifolia*. The specimen selected as the type of the variety, *Moss* 7499, was quoted by Good as belonging to his *L. erecta*.

CAPE. Klaver Valley, *Adamson* 836 (BOL, PRE): *Levyms* 5632 (CT): *Moss* 7499 (BM): *Salter* 5974 (BM, BOL, K, SAM).

16. ***L. unidentata*** A.DC. Monog. Camp. 109. 1830. *Campanula unidentata* Thunb. Prodr. 39. 1798. non L.f. *L. lycopodioides* A.DC. l.c. 114.

A virgate shrublet, 15—40 cm. high. Stems few or many, erect, unbranched except in the inflorescence, the younger hairy. Leaves dark green, alternate, not fasciculate, appressed-ascending, linear-lanceolate,

4—8 mm. long, about 1 mm. wide, the edges revolute to the midrib, with 1—2 sharp teeth near the base. Inflorescence contracted, a simple or compound raceme-like panicle with ascending branches, often secund. Pedicels shortly hairy, 2—12 mm. long. Calyx lobes acute, 2·5 mm. long, revolute. Corolla blue or white internally blue outside, 5 mm. long, glabrous or hairy, the tube very short. Bases of the filaments rhombic, as wide as long, ciliate on the upper edges. Style gradually thickened to the 3-fid stigma. Ovary hemispherical or turbinate, 1—1·5 mm. long. Fruit 10-ribbed, the valves less than half as long as the calyx lobes.

The type is in herb. Thunberg, Uppsala.

Mountain slopes and flats, especially on clay soils, in the central south-coast belt.

Rather variable in size and in the branching of the inflorescence. In the past two species were confused under the name *Campanula unidentata*. Linnaeus fil. described a Thunberg specimen which is *L. divaricata* Buek (*q.v.*). Thunberg (l.c. & Fl. Cap. ed. Schult. 172. 1823), however, described this species. A. De Candolle evidently based his full description on Thunberg's plant. The confusion was first realised by Roemer & Schiltes (Syst. 5. 114. 1819) though they did not separate the plants. Though no authentic specimen has been seen, *L. lycopodioides* A.DC. l.c. seems to be only a few-flowered form.

CALEDON. Swartberg, *Bolus* 7404 (BOL): *Zeyher* 3122 (K, PRE, S, SAM): Baths, *Bolus* 13314 (K, BOL): *Guthrie* 9 (BOL): *O. Kuntze* (K): *Purcell* (SAM).

RIVERSDALE. Albertinia, *Adamson* 4553: Garcias Pass, *Adamson* 4376, 4840: *Burchell* 6857 (K): *Esterhuysen* 17210 (BOL): Aasvogelberg, *Muir* 1449 (BOL, K, PRE): Zoetmelks River, *Burchell* 6736 (K).

MOSEL BAY. Langeberg, *Muir* 1386 (BOL, PRE): *Guthrie* 4346 (BOL): Robinson Pass, *Adamson* 4869.

GEORGE. George, *Bolus* 8664 (BOL, K): *Schlechter* 2301 (K): *Zeyher* (SAM): Wilderness, *Compton* 15506 (NBG).

KNYSNA. Knysna, *Breyer* (PRE): Plettenberg Bay, *Pappe* (G, SAM): *Schlechter* 2301 (BOL): Keurbooms River, *Adamson* 5276: Kirby, *Fourcade* 5519 (BOL): Afghurst Flats, *Fourcade* 1082 (BOL).

UNIONDALE. Long Kloof, *Bolus* 2378 (BOL, K, SAM).

HUMANSDORP. Witelsbosch, *Fourcade* 1157 (BOL): Oudekraal, *Fourcade* 2430a (BOL).

17. *L. axillaris* Sond. Fl. Cap. 3. 558. 1865.

Erect woody shrublet with solitary stems 15—60 cm. high, either unbranched or with few ascending branches. Young stems brown, shortly hairy. Leaves alternate, brightish green, not fasciculate, ascending and

loosely appressed, linear-lanceolate, 5–8 mm. long, 2–3 mm. wide, flat, acute, usually glabrous, the edges revolute, entire or with 1 or more small teeth at the base. Inflorescence contracted, spike-like, the branches ascending and appressed. Pedicels hispid, 2–6 mm. long, the flowers solitary or in groups of 2–3. Calyx lobes about 3 mm. long, acute, the edges slightly revolute, the midrib projecting. Corolla cream-white, 6–10 mm. long, the tube very short. Bases of the filaments oblong, ciliate at the top. Ovary hispid, turbinate, 2 mm. long. Fruit almost urceolate, subglabrous, the valves slightly shorter than the calyx lobes.

The type is *Ecklon* s.n. in herb Sonder. (S).

Confined to the mountains in the extreme south-west.

Allied to *L. unindentata* and often confused with it in collections. Readily distinguished by the much stouter stems, broader leaves revolute at the edges only, the denser inflorescence, and larger white flowers.

CALEDON. Hottentots Holland, *Ecklon* (S): Sir Lowry Pass, *Schlechter* 7244 (BM, BOL, G, K, PRE, SAM), 599 (PRE): Kogelberg, *Stokoe* 931 (PRE): Rooi Els, *Pillans* 8289 (BOL): Palmiet River *Adamson* 4174 (CT), 4903, 4906, 4907: *Esterhuysen* s.n. (BOL), 12580 (BOL), 13703, (NBG, PRE, BOL): *Levy* 5374, 8805 (CT): Babylons Tower, *Esterhuysen* 4973 (BOL): Onrust, *Adamson* 4788: *Esterhuysen* 4926 (NBG).

BREDASDORP. Elim, *Bolus* 8568 (BOL, K): Bredasdorp Mts., *Galpin* 11269 (PRE).

18. *L. stricta* Adamson sp. nov.

Caules ex radice plures erecti pauciramosi. Folia opposita, linearia reflexa fasciculata. Inflorescentia spiciformis. Flores parvi pedicellati saepe in axillis aggregati. Corollae tubus perbrevis. Ovarium hemisphericum. Valvae fructus lobis calycis breviores.

Stems many, 15–40 cm. high, woody at the base only, unbranched or branched from the base, the younger hispidulous. Leaves fasciculate, mostly opposite, spreading or reflexed, linear, 4–9 mm. long, 1 mm. wide, slightly concave above, the midrib projecting below, the edges thickened and remotely toothed. Lower leaves crowded, the upper distant. Inflorescence a spike-like panicle 2–8 cm. long, usually with long internodes in the lower part. Bracts alternate, leaf-like but only 3–4 mm. long. Flowers distant or crowded, most often in groups of 2, 3 or 5. Pedicels hispid, ascending, 2–4 mm. long. Calyx hispidulous, the lobes 2 mm. long, concave inwards. Corolla blue, about 5 mm. long, the lobes acute, the tube very short. Bases of the filaments obovate, shortly ciliate at the top. Style distinctly thickened in the upper half. Ovary hispidulous, rounded below, 1 mm. long. Fruit hemispherical, 1–1.5 mm. long, with 10 ribs: valves shorter than the calyx lobes.

The type is *Adamson* 4862 (BOL).

Sand over limestone on flats near the coast.

RIVERSDALE. Gouritz River Mouth, *Adamson* 4856, 4862, 4865, 4867.

KNYSNA. Ruigte Vlei, *Fourcade* 3911 (BOL).

19. ***L. multiflora*** *Adamson* sp. nov.

Suffrutex ramosa. Folia alterna fasciculata reflexa linearia denticulata. Inflorescentia pedunculata paniculata floribus aggregatis. Flores parvi, lobis calycis cucullatis, corollae tubo perbreve. Ovarium semi-inferum rotundatum. Fructus valvae lobis calycis longiores.

Stems woody at the base, sprawling, with spreading or ascending branches, the younger shortly pubescent. Leaves alternate, fasciculate, the lower crowded and reflexed, the upper distant and spreading, linear 4—8 mm. long, about 1 mm. wide, concave above, the edges thickened and denticulate. Inflorescence on a peduncle 1.5—3 cm. long, paniculate, the branches ascending or spreading, the flowers in groups. Pedicels glabrous or with a few reflexed hairs, 3—6 mm. long. Calyx lobes 1 mm. long, cucullate, glabrous. Corolla blue, 3—4 mm. long, the tube very short. Bases of the filaments almost orbicular, 1 mm. diameter, ciliate on the upper edge. Style much thickened in the upper half: stigma 3-fid, with lobes about 1 mm. long. Fruit 2 mm. diameter, 3 mm. long, the lower part about 1 mm., distinctly ribbed: valves sub-obtuse, distinctly longer than the calyx lobes.

The type is *Adamson* 4850 (BOL).

Sandy flats in the Riversdale district.

Allied to *L. stricta* but quite different in leaf, inflorescence and flower.

RIVERSDALE. Albertinia, *Adamson* 4847, 4850: Botteliersfontein, *Muir* 1813 (BOL, PRE).

Ser. 7. ***Laricifoliae*** v. Brehm. l.c.

Shrublets. Leaves alternate, fasciculate, revolute or often rolled and ericoid, usually toothed. Flowers usually rather large, often aggregated in heads or groups. Ovary inferior or half-inferior, 3-chambered.

The type species is *L. cinerea* (L.f.) Sond.

KEY TO THE SPECIES.

- | | |
|--|--|
| 1. Leaves revolute at least at the edges but not rolled | <i>divaricata</i> |
| 1. Leaves rolled, ericoid. | |
| 2. Leaves very slender, filiform: flowers solitary or few .. | <i>divaricata</i> var.
<i>filifolia</i> |
| 2. Leaves stout, not filiform. | |
| 3. Calyx lobes rolled like the leaves. | |
| 4. Hairs woolly at least on the young parts: flowers in heads: ovary conical | <i>cinerea</i> |

4. Hairs straight, not woolly.
5. Corolla tube 2 mm. long or more, about as long as the calyx lobes; ovary at least as long as wide.
 6. Leaves crowded, squarrose; ovary twice as long as wide, rounded at the base *calcareae*
 6. Leaves scattered, very short; ovary conical, narrowed to the base *rubens* var. *brachyphylla*
5. Corolla tube less than 1 mm. long; ovary as wide as or wider than long *rubens*
3. Calyx lobes flat or revolute at the edges, not rolled.
 7. Flowers solitary; inflorescence branched; corolla tube less than 1 mm. long *albans*
 7. Flowers subsessile in groups; corolla tube 3—4 mm. long, as long as the lobes *squarrosa*

20. *L. divaricata* Buek in E. & Z. Enum. 375 1837 (cf. Adamson J. S. Af. Bot. 19. 159. 1953). *L. ciliata* Sond. Fl. Cap. 3. 561. 1865. *non* Spreng. *Campanula unidentata* L.f. Supp. Pl. 139. 1781. *C. ciliata* Thunb. Fl. Cap. ed. 1. 2. 24. 1818. *non* Stev. *C. Thunbergii* Roem. & Schult. Syst. 5. 135. 1819. *Roella Thunbergii* A.DC. Monog. Camp. 174. 1830. *L. uitenhagensis* Buek l.c. *L. intermedia* Buek l.c. *L. thymifolia* Buek l.c. p.pte.

Stems woody at least at the base, sprawling or prostrate, rarely erect, variable in length, usually hairy, sometimes coarsely or densely so. Leaves fasciculate, alternate, crowded or distant, most often spreading, linear-lanceolate to oblong-lanceolate, 4—8 mm. long, 1—3 mm. wide, glabrous or hairy, flat or more often revolute either at the edges or to the midrib, the edges often with cilia-like teeth near the base. Flowers solitary, terminal on the main stem and branches, often in lax groups, the flowering branches spreading or divaricate. Pedicels usually short. Calyx lobes 2·5—4 mm. long, narrow, acute, with revolute and often toothed edges. Corolla white but blue, purple or brown outside, 6—8 mm. long, the tube shorter than the calyx lobes. Bases of the filaments spatulate or rhombic-spatulate, sometimes almost 3-lobed at the top, densely ciliate. Ovary inferior, rounded at the base: valves in fruit much shorter than the calyx lobes.

The type is Zeyher s.n. (*E. & Z.* 2352) in herb. Sonder (S).

At low altitudes in the south and south-eastern coastal belts.

Variable in habit, leaf size and number, and in inflorescence. While extreme forms look distinct there are all stages of intermediate and no clear dividing lines can be drawn. Large robust forms have been named *L. uitenhagensis* (type *E. & Z.* 2345 (S)), while those with slender branched stems fall under *L. intermedia* (type Zeyher s.n. (S)). The specimen in the Linnean herbarium of *Campanula unidentata* L.f. is certainly this species; it was collected by Thunberg.

SWELLENDAM. Potteberg, *Compton* 19521 (NBG).

RIVERSDALE. Gouritz River Mouth, *Adamson* 4860, 4861.

MOSSEL BAY. Great Brak River, *Bolus* 8665 (K): *Compton* 23545 (NBG).

GEORGE. Wilderness, *Compton* 14349 (NBG).

KNYSNA. Heads, *Galpin* 11469 (PRE): *Martin* 36 (NBG): *Nutzie, Levyns* 7821 (CT): Goukamma Pass, *Fourcade* 6520 (BOL): *Robbeberg, Compton* 2998 (BOL): *Fourcade* 6484 (BOL): *L. F. Taylor* 2998 (NBG): *Belvedere, Duthie* 814 (BOL).

HUMANSDORP. Lourie Plantation, *Dix* 86 (BOL): *Witelsbosch, Fourcade* 1124 (BOL, K): *Zeekoe River, Drege* 6311 (G, S).

UITENHAGE. Uitenhage, *Ecklon & Zeyher* (S): *Thode* A674 (PRE): *Bethelsdorp, Zeyher* 3127 (SAM): *Swartkops River, Drege* (PRE): *Ecklon & Zeyher* s.n. (S), 54 (BOL, K), 2345 (S.SAM), 2351 (SAM), 2353 (S), 2354 (SAM): *Lynes* Z671 a & r (BM): *Zeyher* 54 (BM), 3130 (K, PRE, S, SAM): *Enon, Drege* (S): *Addo, Ecklon* 437 (SAM): *Sundays River, Ecklon & Zeyher* 2554 (SAM): *Amsterdam Vlake, Ecklon & Zeyher* 70 (SAM), 2352 (SAM): *Melkhoutboom, Story* 2750 (PRE).

PORT ELIZABETH. Port Elizabeth, *Comins* 749 (PRE): *Forbes* 20 (BM): *Wilms* 2451 (BM, K): *Redhouse, Paterson* 294 (BOL, K): *Thornhill, Paterson* (PRE): *Vaal Vlei, Mogg* 4730 (PRE): *Coega, Compton* 19761 (NBG): *Ecklon & Zeyher* 15.3 (S): *Earncliff, Galpin* 6371 (PRE).

SOMERSET EAST. Zuurburg, *Long* 1235 (K): *Paterson* 55 (PRE): *Rennie* 468 (CT): *Kleinmans River, MacOwan* 1399 (SAM).

ALEXANDRIA. Alexandria, *Compton* 19668 (NBG): *Nanaga, Acocks* 12799 (PRE).

ALBANY. Grahamstown, *Acocks* 13618 (PRE): *Ecklon & Zeyher* 2343 (S, SAM), 2352 (S): *Zeyher* 3119 (SAM): *Road to Riebeeck East, Burchell* 3506 (K).

ALBERT. Nieuw Hantam, *Drege* 6317 (K).

UMTATA. Umtata, *Drege* 7496 (K, S).

NATAL. Umlaas Riv., *Wood* (SAM).

Without locality:—*Drege* (G), 6294 (G, S), 6316 (BM), 7496 (G): *Ecklon & Zeyher* s.n. (CGE), 2363 (BOL, G): *Zeyher* (S).

Var. *debilis* Adamson comb. nov. *L. ciliata* var. *debilis* Sond. Fl. Cap. 3. 561. 1865. *L. mucronulata* Buek in E. & Z. Enum. 375. 1837.

Slender, sprawling, forming loose tangles on the ground. Leaves distant, ovate-lanceolate, 3—4 mm. long, distinctly narrowed to the base, flat or revolute at the edges, the tip mucronate and hooked. Flowers mostly solitary. Calyx lobes 1—2.5 mm. long, toothed at the base. Corolla 4—5 mm. long, the tube often longer than the calyx lobes.

The type is *Zeyher* 3131 (S).

Damp places on the southern coastal strip.

GEORGE. Wilderness, *van Niekerk* 250 (BOL).

KNYSNA. Knysna, *Pappe* (SAM): *Penther* 2754 (BM): Portland, *Duthie* 915 (BOL): Barrington, *Steyn* 752 (NBG): Diep River, *Bolus* 2377 (BOL, K): Umtini River, *Schlechter* 5901 (K): Umtini River, *Schlechter* 2476 (PRE).

HUMANSDORP. Riet Vlei, *Esterhuysen* 6613 (BOL): Ratelsfontein, *Fourcade* 114 (BOL): Witelsbosch, *Fourcade* 1124a (BOL): Kromme River, *Burchell* 4870 (K): Maitland, *Burchell* 4583 (K).

UNIONDALE. Joubertina, *Esterhuysen* 6897 (BOL): de Hoek, *Esterhuysen* 10668 (BOL).

UITENHAGE. Van Stadensberg, *Bolus* 9140 (BOL): *Ecklon* 2363 (BOL): *Ecklon & Zeyher* (SAM): *MacOwan* 1101 (K): Winterhoek, *Zeyher* 3131 (S, SAM): Uitenhage, *Ecklon* (S): *Ecklon & Zeyher* 2353 (S, SAM): Zuurberg, *Drege* 6316 (S), s.n. (G, K).

ALBANY. Howiesons Poort, *Glass* 725 (SAM): Grahamstown, *Ecklon & Zeyher* 2313 (SAM): *MacOwan* 1504 (BOL): *Scott-Elliot* 835 (BM): Kraisfontein, *MacOwan* 181 (SAM), 1504 (SAM).

Var. *filifolia* Adamson nom. nov. *L. laricina* Buek in E. & Z. Enum. 373. 1837. p.pt. *L. thymifolia* Buek. l.c. p.pt. *L. Buekii* Sond. Fl. Cap. 3. 560. 1865.

More erect than the typical form. Leaves very slender, filiform, entire or minutely toothed at the base, 6—9 mm. long, apparently in tufts. Flowers mostly solitary, on slender pedicels 3—8 mm. long. Calyx lobes rolled, leaf-like, spreading in fruit. Corolla white, purplish outside, 7—8 mm. long, the tube very short. Ovary turbinate. Fruit 3—4 mm. long; valves obtuse, much shorter than the calyx lobes.

The type is *Zeyher* s.n. in herb. Sonder (S).

Apparently rare and seldom collected.

UITENHAGE. Swartkops River, *Zeyher* 3129 (K, PRE, S): s.l. *Zeyher* (S).

ALBANY. Bushmans River, *Story* 2291 (PRE).

21. *L. albens* Spreng. ex A.DC. Monog. Camp. 110. 1830. *L. laricina* Buek. in E. & Z. Enum. 373. 1837. p.pt.

A gray-green bushy shrublet, 20—40 cm. high, usually much branched. Stems densely covered with short hairs and appearing gray or white. Leaves alternate, fasciculate, ericoid-rolled, 0.3—1 cm. long, gray-green, glabrous or with a few scattered hairs, mucronate at the tip. Lower leaves crowded, the upper shorter and often distant. Inflorescence branched, the branches 1—5 cm. long, rigid, finally spinous. Flowers

solitary. Calyx lobes flat, 3 mm. long, slightly revolute. Corolla white, usually brownish outside, 4.5—6 mm. long, the tube 1 mm. or less, the lobes cucullate. Bases of the filaments rhombic, acute, densely ciliate. Ovary half-inferior, as wide as or wider than long, the lower part rounded or slightly retuse. Fruit valves shorter than the calyx lobes.

The type is *Burchell* 2720 in herb. Kew.

Wide spread in dry situations in the south-eastern districts, also extending to the grassveld and the margins of the karroo.

Variable in size, in the amount of branching, and in the inflorescence. Much grazed in karroo localities and becoming compact. In collections it has been much confused with *L. nodosa* Buck. though the leaves are quite different.

CAPE:

CALEDON. Baths, *Drege* (BOL): Sondereinde River, *Zeyher* 3120 (K, S, SAM).

UITENHAGE. Uitenhage, *Alexander* (K): *Zeyher* 35 (K, S), 55 (BOL, BM): Swartkops River, *Ecklon & Zeyher* 2350 (SAM): *Harvey* 55 (SAM): *Lynes* 1442, Z671g (BM): *Zeyher* 55 (SAM), 438 (S), 3129 (PRE, S, SAM): Enon, *Baur* 1107 (K).

ALEXANDRIA. Alexandria, *Compton* 19662 (NBG).

ALBANY. Grahamstown, *Adamson* 5161: *Galpin* 198 (PRE): Cradock Road, *Dyer* 2206 (PRE).

BATHURST. Port Alfred, *Drege* 6317a (G).

SOMERSET EAST. Gt. Fish River, *Drege* 6317 (BM, CGE, G, K, S): Somerset East, *Acocks* 15673 (PRE).

PEARSTON. Buffelshoek Mts., *Story* 78 (PRE).

QUEENSTOWN. Bowkers Kop, *Tyson* (K, SAM): Lerrington, *Galpin* 2011 (PRE): Bailey, *Galpin* 2222 (PRE).

KOMGHA. Komgha, *Flanagan* 1361 (PRE, SAM), 3079 (BOL).

ALBERT. Burgersdorp, *Cooper* 654 (K), 774 (BM, BOL): *Guthrie* 4459 (NBG): Nootgedacht, *Thorne* (SAM).

ALIWAL NORTH. Jamestown, *Acocks* 11189 (PRE): *Barker* 2150 (NBG): Aliwal North, *Gerstner* 142 (PRE): Elandshoek, *Bolus* 10525 (BOL): *Story* 2059 (PRE): Kruidfontein, *Thode* A1822 (K, PRE).

HERSCHEL. Sterkspruit, *Hepburn* 201 (SAM).

CRADOCK. Cradock, *Brynard* 6152 (PRE): *Talbot* (BOL): Vlekpoort, *Acocks* 12812 (PRE).

MIDDELBURG. Middelburg Road, *O. Kuntze* (K): Grootfontein, *Theron* 330 (PRE): Rietpoort, *Comins* 719 (PRE): Kikvorsich Mts., *Hutchinson* 3079 (K, PRE): *Dyer* 1909 (PRE).

RICHMOND. Compassberg, *Shaw* (K): Vlakplaats, *Bolus* 13814 (PRE).

GRAAFF-REINET. Graaff-Reinet, *Bolus* 86 (BM, BOL, K), 15 (BOL): Bethesda Road, Godfrey (PRE): Riet Vlei, *Galpin* 4969 (PRE).
COLLESBURG. Collesburg, *Shaw* (K).

PHILLIPSTOWN. Rietfontein, *Burchell* 2720 (G, K): Paardeberg, *Burchell* 2692 (K).

O.F.S.:

FAURESMTIH. Fauresmith. *Henrici* 1868 (PRE): *Pole Evans* 1646 (PRE): *C. A. Smith* 5462 (PRE): *Verdoorn* 1017 (PRE), 1366 (K), 2359 (PRE): Platberg, *Brueckner* 698 (PRE).

BLOEMFONTEIN. Bloemfontein, *Potts* 452 (BOL): Naval Hill, *Compton* 15682 (NBG).

THABANCHU. Sepani, *Brierley* 209 (BM).

BETHLEHEM. Bethlehem, *E. P. Phillips* 3125 (PRE).

DE WETSDORP. De Wetsdorp, *Steyn* 939 (BOL, NBG).

ROUXVILLE. Orange River, *Burke* (BM, K, PRE): *Zeyher* 1060 (BM, CGE, G, K).

HARRISMITH. Witzieshoek, *Junod* (PRE).

BASUTOLAND. Leribe, *Dieterlen* 402 (PRE): Mokodlong, *Guillermot* 1190 (PRE): Phutha, *Compton* 21642 (NBG): Thyateyaning, *Collett* 469 (K, PRE): Quthing, *Dieterlen* 1196 (SAM).

Without locality:—*Zeyher* 266 (G): *Verreaux* (G).

22. *L. cinerea* (L.f.) Sond. Fl. Cap. 3. 557. 1865. *L. albanensis* Sond. l.c. *Campanula cinerea* L.f. Supp. Pl. 139. 1781. *Roella cinerea* A.DC. Monog. Camp. 175. 1830. *L. grisea* Buek in E. & Z. Enum. 374. 1837.

Erect, sprawling or semiprostrate, usually gray in colour. Stems woody, branched, covered at least when young with white woolly hairs, the hairs few or many, sometimes confined to the apex and leaf axils. Leaves fasciculate, ascending or spreading, ericoid, rolled, 3—12 mm. long, commonly 4—6, mucronate at the tip, usually toothed at the base. Lower leaves crowded, the upper more distant. Leaves woolly at least in the axils. Flowers in heads surrounded by leaf-like bracts. Heads with 1—6 flowers, few or many, sessile, variously arranged, often on divaricate branches. Bracts erect or falcate, longer than the leaves. Flowers usually woolly, sessile. Calyx lobes leaf-like, rolled, usually toothed, 2.5—5 mm. long. Corolla white, brown or purple-brown outside, 6—9 mm. long, the tube 1.5 mm., the lobes hairy though sometimes only on the middle line. Bases of the filaments oblong to subrotund, folded inwards, obtuse or truncate, ciliate. Style hairy, purple, gradually thickened to the 3-fid stigma. Ovary inferior, 3—4 mm. long, conical, pointed at the base. Fruit with valves a little shorter than the erect or spreading calyx lobes.

The type is *Thunberg* in herb. Linn. (221.37).

Lower mountain slopes in the south central Cape.

Variable in habit but readily distinguished by the woolly hairs, rolled ericoid leaves, flowers in heads, large corolla, and conical ovary. *L. albanensis* Sond. which was founded on specimens collected by Zeyher (S) in Howiesons Poort cannot be separated. The solitary specimen in herb. Sonder is not glabrous as described.

CALEDON. Genadendal, *Schlechter* 7757 (BM): Elandsrivierberg, Zeyher (S): Greyton, Gillett 883 (BOL).

BREDASDORP. Napier, *Adamson* 4770: Elim, *Adamson* 4777: Bontebok Park, *Compton* 22623 (NBG).

SWELLENDAM. Swellendam, *Bolus* 8070 (BOL, K): Bowie 11 (BM): Potteberg, *Adamson* 3914, 4803, 4805, 4807-8: Infanta, *Adamson* 4174 (CT).

RIVERSDALE. Garcias Pass, *Adamson* 4375, 4830, 4836-7, 4843: *Bolus* 2379 (K), s.n. (BOL): Kortefontein, *Hafstrom & Acock* 1988 (PRE): Albertinia, *Adamson* 4849.

PRINCE ALBERT. Swartberg Pass, *Adamson* 4353, 4875, 4878-9, 4882-3, 4886, 4888: *Stokoe* 8657 (BOL).

GEORGE. Camfer, *Adamson* 5182.

KNYSNA. Knysna, *Morris* 387 (NBG): Paardekop, *Morris* 387 (BOL): Keurbooms River, *Compton* 7199 (NBG): Formosa, *Fourcade* 603 (BOL): Plettenburg Bay, *Fourcade* 603 (BOL): Vlugt, *Bolus* 2397 (BOL).

UNIONDALE. Avontuur, *Fourcade* 2076 (BOL): Lauterwater, *Compton* 5220 (NBG): de Hoek, *Esterhuysen* 13675 (BOL, PRE).

HUMANSDORP. Oudebosch, *Fourcade* 1149 (BOL, K): Storms River, *Story* 2424 (PRE): Combrink, *Adamson* 5202: Baviaans Kloof Mts., *Adamson* 5200: Assegaiibosch. *Breyer* (PRE): Krakakama, *Ecklon & Zeyher* (S).

UITENHAGE. Van Stadensberg, *Ecklon* (S): *MacOwan* 2080 (K, SAM): Van Stadens River, *Burchell* 4682 (K): *Ecklon & Zeyher* 2347 (G, SAM): Uitenhage, *Zeyher* 827 (K): Swartkops River, *Ecklon* 2350 (BOL).

ALBANY. Howiesons Poort, *Zeyher* (S): Grahamstown, *Flanagan* 1500 (PRE): Bothasberg, *MacOwan* 1500 (BOL, K).

ALEXANDRIA. Road to Port Elizabeth, *Hafstrom & Acock* 1476 (PRE).

Without locality:—*Alexander* (BM): *Burmann* (G): *Ecklon & Zeyher* (PRE).

23. *L. rubens* Buek in E. & Z. Enum. 373. 1837. *L. angustifolia* A.DC. in DC. Prodr. 7. 418. 1839.

Stems woody, ascending, reddish brown, covered with short spreading hairs, often much branched. Leaves fasciculate, spreading, ericoid rolled,

though slightly open-backed, 3—6 mm. long, green, glabrous, mucronate at the tip, usually with 1—2 pairs of sharp teeth near the base. Inflorescence with few or many erecto-patent branches, sometimes corymbose, sometimes almost spike-like. Flowers in groups of 2—3. Bracts like the leaves but less rolled and with longer teeth. Calyx glabrous or nearly so, the lobes revolute-rolled, 2—3 mm. long, usually with slender teeth near the base. Corolla white, purple or brownish outside, 3·5—7 mm. long, the tube less than 1 mm. the lobes slightly widened to the tip, hairy outside but often very thinly so. Bases of the filaments oblong or oblong-spathulate, thinly ciliate. Ovary wider than long, hemispherical below. Fruit wider than long, the valves much shorter than the calyx lobes.

The type is *Ecklon* s.n. from Swartkops River in herb. Sonder (S), the type of *L. angustifolia* is *Drege* 6320 (G).

Rather dry mountain slopes in the southern and south-eastern coastal belt.

The whole plant often becomes reddish-brown in the later phases.

BREDASDORP. Nachtwacht, *C. A. Smith* 4267 (PRE): Napier, *Adamson* 4769.

LADISMITH. Seven Weeks' Poort, *Compton* 8608 (NBG): *Lewis* (SAM).

RIVERSDALE. Garcias Pass, *Adamson* 4824, 4826, 4827: Gouritz River mouth, *Adamson* 4803.

OUTDSHOORN. Montagu Pass (N. side), *Adamson* 5172: Swartberg, *Adamson* 4873.

MOSSEL BAY. Langeberg, *Muir* 1387 (BOL, K, PRE): Mossel Bay, *Guthrie* 4341 (NBG): Great Brak River, *Bolus* 8665 (BOL).

GEORGE. Montagu Pass, *Adamson* 5174-5-6: Camfer, *Esterhuysen* 16792 (BOL, PRE).

UNIONDALE. Avontuur, *Adamson* 5186: *Fourcade* 3230 (PRE): Misgund, *Fourcade* 1347 (BOL): Lauterwater, *Compton* 5216 (BOL, NBG): Wagenbooms River, *Burchell* 4933 (K).

WILLOWMORE. Baviaans Kloof, *Adamson* 5190, 5191, 5192.

HUMANSDORP. Krom River, *Drege* 6320 (G, S): Melk River, *Burchell* 4794 (K): Clarkson, *Thode* A918 (PRE): Krakakama, *Bolus* 1098 (K): *Zeyher* 3133 (SAM): Jeffreys Bay, *Burt-Davy* 12007 (PRE): *Fourcade* 5918 (BOL).

UITENHAGE. Winterhoek Mts., *Zeyher* 3121 (K, PRE), 3127 (BOL, S, SAM), 3131 (SAM): Van Stadens River, *Zeyher* (SAM): Bethelsdorp, *Zeyher* 3127 (PRE, K, S, SAM): Uitenhage, *Ecklon & Zeyher* 2346 (SAM): *Harvey* (BM): Swartkops River, *Ecklon* (S).

PORT ELIZABETH. Earncliff, *Galpin* 6372 (PRE).

SOMERSET EAST. Zuurburg, *Bolus* 914 (BOL, K): *Long* 1235 (PRE): *Schonland* 3230 (PRE, K).

Without locality:—*Drege* 9138 (S), s.n. (G).

Var. **brachyphylla** Adamson var. nov.

A typo differt foliis brevioribus squarrosis vel recurvatis, corollae tubo longiore, ovario conico basi attenuato.

Stems more hairy and usually less branched. Leaves short, 2—4 mm., shorter than the internodes, spreading or recurved. Flowers almost sessile, in small heads. Calyx lobes ciliate. Corolla tube 2 mm. long, two-thirds the length of the calyx lobes. Bases of the filaments widened or bulged at the sides. Ovary conical, distinctly narrowed to the base. Valves very short.

The type is *Adamson* 4798 (BOL).

Limestone flats near the coast.

BREDASDORP. Kathoek, *Pillans* 9377 (BOL, K, NBG, PRE).

SWELLENDAM. Infanta, *Adamson* 4800: Potteberg, *Adamson* 4796-7-8-9, 4800, 4801.

24. **L. calcarea** Adamson sp. nov.

L. cinerea affinis sed differt caulibus pubescentibus nec lanatis, foliis congestis squarroso-patentibus, floribus corymbosis, bracteis longioribus, ovario turbinato, valvis brevioribus.

Sprawling or procumbent, much branched. Stems covered with short stiff hairs but not woolly. Leaves fasciculate, usually crowded, spreading, squarrose, revolute-rolled, green, 4—8 mm. long, usually glabrous, distinctly narrowed to the base, mucronate at the tip, with 1, 2 or 3 pairs of lateral teeth near the base. Flowers almost sessile, in groups of 2—5, the groups on long or short usually corymbose branches. Bracts like the leaves but longer and more prominently toothed. Calyx lobes rigid, revolute rolled, 2—5 mm. long, with slender teeth near the base. Corolla white, often blue-purple outside, 8—15 mm. long, the tube slightly shorter than the calyx lobes, the lobes glabrous or very thinly hairy. Bases of the filaments oblong or oblong-spathulate, ciliate. Style purple, thickened in the upper part. Ovary inferior, about twice as long as wide, 3—4 mm. long, rounded at the base. Fruit with valves much shorter than the spreading calyx lobes.

The type is *Adamson* 4790 (BOL).

Limestone near the coast in the Bredasdorp-Swellendam region.

Allied to *L. cinerea* but easily distinguished by the absence of woolly hairs, the crowded squarrose toothed leaves, large flowers in heads, longer corolla tube, and rounded ovary.

BREDASDORP. Cape Agulhas, *Esterhuysen* 4424 (BOL, PRE): *Hafstrom & Acock* 2008 (PRE): The Poort, *Adamson* 4788-9, 4790, 4792, 4793-4: *Esterhuysen* 19576 (BOL): *Barker* 7224 (NBG): Riefontein Poort, *Schlechter* 1475 (PRE), 9683 (BM, G, K, PRE): Brandfontein, *Esterhuysen* 19096 (BOL): Bontebok Park, *Compton* 22152 (NBG): Struys Bay, *Salter* 4101 (BOL): Die Mond, *Martin* 590 (NBG): Elim, *Bolus* 8569 (BOL, K, PRE): *Guthrie* 4461 (NBG): *Stokoe* (SAM).

SWELLENDAM. Infanta, *Adamson* 3789 (CT), 4814, 4818, 4819: Breede River Mouth, *Adamson* 4798.

25. ***L. squarrosa*** Adamson sp. nov.

Suffrutex erecta ramosa. Folia fasciculata, congesta, squarrosa, ericoidea. Flores terminales subsessiles. Calycis lobi breves. Corollae tubus lobis calycis longior, lobi glabri. Ovarium hemisphaericum.

Stems erect, woody, 25—35 cm. high, much branched. Leaves much crowded, fasciculate, squarrose, ericoid-rolled, 3—5 mm. long, gray-green, ciliate at the base otherwise glabrous, usually toothed at the base. Flowers in groups of 2—5 at the tips of the branches: peduncles hairy, 2 mm. long. Calyx lobes about 2 mm. long, triangular revolute at the edges but not rolled. Corolla white, blue or purple outside, about 6 mm. long, the tube 3 mm., distinctly longer than the calyx lobes, the lobes glabrous. Bases of the filaments elliptical-oblong, densely ciliate. Style hairy, thickened at the tip. Ovary inferior, hemispherical, as wide as long, about 2 mm., hairy. Fruit valves about as long as the calyx lobes.

The type is *Levyns* 8822 (CT).

Rare on limestones at low levels.

Allied to *L. calcarea* but differing in habit, colour, the short calyx lobes which are not rolled, long corolla tube, and ovary as wide as long.

BREDASDORP. The Poort, *Levyns* 8822 (CT).

RIVERSDALE. Riversdale, *Muir* 2627 (PRE).

Ser. 8. ***Tenellae*** v. Brehm. l.c.

Shrubs. Leaves alternate or rarely opposite, usually thick, concave above, reflexed or recurved, usually fasciculate. Flowers often umbellate. Corolla with a very short tube. Ovary 3- or 2-chambered, ranging from superior to quite inferior.

The type species is *L. tenella* Lodd.

KEY TO THE SPECIES.

1. Ovary inferior, the lower part as long as or longer than wide.
2. Woody, more or less erect.
3. Flowers in heads: bracts longer than the pedicels: ovary conical, pointed at the base *fasciculata*

- 3. Flowers not in heads: bracts shorter than the pedicels: ovary not pointed at the base.
- 4. Leaves reflexed.
 - 5. Leaves thick, concave above *diffusa*
 - 5. Leaves not thickened, flat.
 - 6. Leaves alternate: flowers small, in a branched inflorescence *diffusa* var. *Stokoci*
 - 6. Leaves opposite: flowers large, umbellate *umbellata*
 - 4. Leaves squarrose-recurved: inflorescence lax *diffusa* var. *palustris*
- 2. Almost herbaceous, prostrate or sprawling.
 - 7. Hispid: leaves not fasciculate, toothed: inflorescence branched *planifolia*
 - 7. Glabrous or with very short hairs: leaves fasciculate: flowers few, terminal or axillary *tenella* var. *montana*
- 1. Ovary less than half inferior, the lower part as wide as or wider than long.
 - 8. Ovary almost superior *intricata*
 - 8. Ovary partly inferior.
 - 9. Slender, sprawling: inflorescence raceme-like: flowers blue *tenella*
 - 9. Woody, erect: flowers white.
 - 10. Leaves reflexed, longer than wide: flowers mostly solitary *nodosa*
 - 10. Leaves squarrose, mostly recurved.
 - 11. Leaves very small, not recurved: flowers solitary or raceme-like *pauciflora*
 - 11. Leaves as wide as long, recurved: flowers umbellate.
 - 12. Tall: leaves scattered, 1.5—3 mm. long: valves in fruit shorter than the calyx lobes *rigida*
 - 12. Low-growing: leaves crowded, 1 mm. long: valves in fruit longer than the calyx lobes *microphylla*

26. *L. fasciculata* (L.f.) A.DC. Monog. Camp. 112. 1830. *Campanula fasciculata* L.f. Supp. Pl. 139. 1781.

Stems woody, up to 80 cm. high, solitary, erect, branched from the base or in the upper parts, the younger brown, hispidulous or almost glabrous. Leaves alternate, fasciculate, reflexed, ovate or ovate-lanceolate, 3—5 mm. long, 1.3—2.5 mm. wide, thick, concave above, acute, glabrous or with a few hairs on the underside, entire or minutely toothed at the base. Leaves crowded or distant in the upper parts. Flowers in terminal heads with 2 to many flowers. Bracts flat, rather thin, acute, toothed, 0.5—1.5 cm. long, hairy on the midrib, much longer than the pedicels, usually longer than the flowers. Pedicels hispid, 1—3 mm. long. Calyx lobes 3—6 mm. long, narrow, acuminate, toothed, usually revolute at the edges. Corolla 6—10 mm. long, white but blue or purple outside, the tube very short, the lobes narrow, spreading, hairy on the mid line outside. Bases of the filaments oblong, acute, with lateral bulges, finely ciliate. Style hairy: stigma 3-fid. Ovary inferior, 2—4 mm. long, pointed at the base. Fruit obconical, the valves shorter than the calyx lobes.

The type is in herb. *Thunberg*, Uppsala.

Lower mountain slopes in the central south coastal belt.

In the past this species has been much confused with forms of *L. diffusa* with aggregated flowers. The bracts are quite characteristic.

RIVERSDALE. Langeberg, *Muir* 1389 (BOL), 1433 (PRE); Garcias Pass, *Adamson* 4377, 4839, 4841, 4842, 4845: *Esterhuysen* 17229 (BOL); Albertinia, *Adamson* 4851, 4854 (PRE); Gouritz River Mouth, *Adamson* 4857.

MOSSEL BAY. Mossel Bay, *Adamson* 4968: *Burchell* 6314 (K): *Moran* (BOL); Langeberg, *Muir* 1384 (K), 1389 (PRE); Cloetes Pass, *Adamson* 4338: *Zinn* (SAM); Eightbells, *Adamson* 4870: Reutersbosch, *Adamson* 4871: *Van Niekerk* 114 (BOL).

GEORGE. George, *Bolus* (BOL): *Hutchinson* 1272 (K); *Prior* (K): Zwart River, *Fourcade* 6380 (BOL); Camfer, *Esterhuysen* 13316 (PRE).

KNYSNA. Belvedere, *Duthie* 813 (BOL); Knysna, *Breyer* (PRE); Heads, *Martin* 387 (NBG); Gouna, *Keet* 957 (PRE); Nutzie, *Keet* 677: Plettenburg Bay, *Pappe* (K, S, SAM); Keurbooms River, *Fourcade* 184 (BOL); Groot River, *Fourcade* 1167 (BOL).

UNIONDALE. Prince Alfreds Pass, *Stokoe* (SAM).

LADISMITH. Seven Weeks Poort, *Stokoe* 8997 (BOL).

OUDTSHOORN. Swartberg Pass, *Adamson* 4361: *Stokoe* 1751 (PRE), s.n. (SAM).

Without locality:—*Drege* (G); *Moricaud* (G); *Oldenburg* 714 (BM); *Ferreaux* (G).

27. *L. diffusa* Buek in E. & Z. Enum. 376. 1837. *L. tenella* A.DC. Monog. Camp. 111. t.3B. 1830. p.pt. non Lodd. *L. tenella* var. *brevivalvis* A.DC. in DC. Prodr. 7. 418. 1839. p.pt. *Campanula tenella* L.f Supp. Pl. 139. 1781.

An erect or sprawling branched shrublet, 15—50 cm. high. Stems shortly hairy. Leaves alternate, fasciculate, reflexed, crowded or distant all along, ovate to ovate-lanceolate, 2—5 mm. long, 1—4 mm. wide, acute, thick, concave above, the edges thickened, entire or with a few very minute teeth at the base. Flowers usually in groups of 3, sometimes aggregated at the stem tip, sometimes lateral, sometimes lax. Pedicels from minute to 1.3 cm. long, hairy. Bracts like the leaves but much smaller. Calyx lobes 2—3 mm. long, acute, involute, minutely toothed at the base. Corolla white, blue or purple outside, 5—8 mm. long, the tube very short, the lobes narrow, spreading, glabrous, slightly cucullate at the tip. Bases of the filaments obovate, truncate or almost 3-lobed, shortly but densely ciliate. Style blue, distinctly thickened at the top. Ovary more than half inferior, hemispherical below, occasionally flattened or slightly pointed at the base, usually glabrous. Fruit 2—3 mm. long, 2 mm.

diameter: valves about as long as or very slightly longer than the calyx lobes.

The type is *Zeyher* s.n. in herb. Sonder, (S), the type of *Campanula tenella* is in herb. Linn. (221.25).

Common at low altitudes, especially on sand, in the S.W. coastal belt.

Variable in habit, amount of branching, and in the grouping of the flowers and length of the pedicels. While extreme forms look distinct they are connected by intermediates. The species is recognised by the thick reflexed leaves, the very short corolla tube, and the inferior almost hemispherical ovary.

This species has most commonly been named "*L. tenella* A.DC." but that name is invalid. Following Sonder (Fl. Cap. 3. 562. 1865), who used that name for an aggregate species which is now segregated, there has been a good deal of confusion. The present species is undoubtedly that named *Campanula tenella* by Linnaeus fil., but the combination under *Lightfootia* is antedated by Loddiges who depicted another plant. Buek, who was the first to attempt segregation of the complex, gave a rather poor description but the type specimen of his *L. diffusa*, *Zeyher* s.n. (S), is certainly identical with the Linnean specimen though a rather xeromorphic form. A. De Candolle's figure also represents a form of this species but the only specimens of it in his herbarium are placed under varieties. (cf. also under *L. tenella* Lodd.)

CAPE. Strandfontein, *Adamson* 4766 (PRE): *Compton* 12796 (NBG): Doornhoogte, *Ecklon & Zeyher* 2354 (G, SAM), 2355 (BOL, G, SAM): Vygeskraal, *Guthrie* 1248 (CT): Cape Town, *Bolus* 7291 (BOL): *Ecklon* (BM), 156 (G): *Prior* (K): Camps Bay, *Moss* 1617 (BM), 7562 (BM): Little Lion's Head, *Compton* 18581 (NBG): Hout Bay, *Bond* 118 (NBG): *Galpin* 4306 (PRE): Rondebosch, *Wolley-Dod* 185 (K): Wynberg, *Zeyher* 3126 (S, SAM): Lakeside, *Adamson* 1363 (CT): Muizenberg, *Adamson* 5225: *Moss* 7529 (BM): Fishhoek, *Young* (PRE): Simonstown, *Wolley-Dod* 648 (BM, BOL, K): Witsands, *Compton* 10619 (NBG): Theefontein, *Compton* 21859 (NBG): Matrooskop, *Adamson* 2461 (BOL): Buffels Bay, *L. Bolus* (CT): *Compton* 6358, 12578 (NBG): Cape Point, *L. Bolus* (CT): *Compton* 12517 (NBG): *Salter* 291/20 (BM).

STELLENBOSCH. ǀKuijs River, *Pappe* (SAM): *Salter* 4923 (BM, K): *Zeyher* (S).

WORCESTER. Karroo Garlen, *Cross* 50 (NBG): Pieter Meintjies, *Rogers* 17898 (G).

CALEDON. RooiĖls, *Adamson* 4699: *Parker* 4176 (NBG): Hangklip, *Stokoe* (SAM): Pringle Bay, *Adamson* 4698: Gans Baai, *Stokoe* (SAM).

BREDASDORP. Napier, *Adamson* 4771: Baardscheermansbosch, *Stokoe* (SAM): Struys Bay, *Esterhuysen* 4441 (BOL): Ratel River, *Adamson* 4787.

SWELLENDAM. Clock Peaks, *Wurts* 127 (NBG): Infanta, *Adamson* 4811, 4816.

HEIDELBERG. Lemoenshoek, *Stokoe* (SAM).

LADISMITH. Ladismith, *Levy's* 2069 (CT).

RIVERSDALE. Riversdale, *Bolus* 11326 (K, PRE): Windvogelberg, *Drege* (CGE, G).

WILLOWMORE. Baviaans Kloof, *Adamson* 5221.

UNIONDALE. Avontuur, *Adamson* 5184, 5185, 5186A.

MOSEL BAY. Dwyka River, *Burchell* 6398 (K).

UITENHAGE. Swartkops River, *Ecklon & Zeyher* (SAM).

PORT ELIZABETH. Port Elizabeth, *Forbes* (CGE, K): *Harvey* (K).

ALEXANDRIA. Sundays River, *Ecklon & Zeyher* 2353 (SAM).

ALBANY. Howiesons Poort, *Zeyher* 3119 (S): Grahamstown, *Galpin* 199 (PRE): Bothas Hill, *Dyer* 1450 (PRE).

KEISKAMA. Keiskama Hoek, *Sim* (PRE).

QUEENSTOWN. Finehans Nek, *Galpin* 1791 (PRE).

"Between Cape Town and George". *Rogers* (BM).

Without locality:—*Burmah* (G): *Ecklon* 156 (K, S): *Ecklon & Zeyher* 2356 (PRE), s.n. (S): *Elliot* (G): *Harvey* (BM, K): *Masson* (BM): *E. P. Phillips* (PRE): *Roxburgh* (K): *Ryder* (K): *Sparrmann* (S): *Verreaux* (G).

Var. *palustris* *Adamson* var. nov.

A typo differt caulibus tenuioribus laxo ramosis, foliis distantibus, floribus subsolitariis pedicellis longis, fructibus minoribus.

Tall, slender, with lax ascending branches. Leaves distant, ovate-oblong, 1—3 mm. long, 0.5—1 mm. wide, reflexed or recurved. Flowers few, at the tips of the branches, on slender pedicels 0.7—1 cm. long. Calyx lobes 2 mm. long, not or very minutely revolute. Corolla white, the lobes with blue tips outside, glabrous. Bases of the filaments longer and less truncate. Ovary smooth, 1 mm. long. Fruit 1.5 mm. long and wide, the valves slightly shorter than the calyx lobes.

The type is *Adamson* 4821 (BOL).

Damp places by streams or on peat in the central Langeberg.

Very distinct in habit and in the elongated lax pedicels.

SWELLENDAM. Tradouw Pass, *Adamson* 4821, 4822 (PRE): *Compton* 8579 (PRE): *Lewis* (SAM): Lemoenshoek Mts., *Stokoe* (SAM): Mts. near Swellendam, *O. Kuntze* (K).

RIVERSDALE. Langeberg, *Muir* 2626 (PRE): Garcias Pass, *Esterhuysen* 17328 (BOL, K).

Without locality:—*Bowie* 2 (BM).

Var. **Stokoei** Adamson var. nov.

A typo differt foliis lineari-oblongis planis haud incrassatis marginibus revolutis, floribus minoribus, fructibus 2 vel 3 locularibus, valvis longioribus.

Smaller and more slender than the typical form. Leaves alternate, linear-oblong, 3—8 mm. long, 1.5—2 mm. wide, not thickened, the edges revolute. Inflorescence lax, with slender branches. Pedicels 0.4—1 cm. long. Calyx lobes less than 1 mm. long. Bases of the filaments rhombic-oval, acute, ciliate. Ovary inferior, rounded at the base, usually hairy, 2- or 3-chambered. Fruit 1—3 mm. long and wide, the valves 2 to 3 times as long as the calyx lobes.

The type is *Stokoe* 8658 (BOL).

Rare on mountains in the Caledon-Bredasdorp areas.

CALEDON. Palmiet River, *Stokoe* 8658 (BOL): Gans Baai, *Stokoe* 7547 (BOL): Genadendal, *Burchell* 8634 (K): Baviaans Kloof, *Burchell* 7849, 7882 (K).

BREDASDORP. Baardscheedersbosch, *Stokoe* (SAM).

28. **L. umbellata** Adamson sp. nov.

Suffrutex *L. diffuso* affinis sed differt foliis oppositis lineari-lanceolatis distantibus. Floribus majoribus umbellatis, fructibus majoribus valvis lobis calycis multo brevioribus.

A branched erect or sprawling shrublet 30—50 cm. high. Young stems gray, ridged, shortly hairy. Leaves opposite or mostly so, reflexed, distant, usually not fasciculate, linear-lanceolate, 5—8 mm. long, 1—2 mm. wide, more or less concave above. Leaves shorter than the internodes. Inflorescence a terminal cymose umbel. Pedicels 3—6 mm. long, hispid at least when young. Calyx lobes 2—3 mm. long, lanceolate, acute, slightly revolute. Corolla white, blue or purplish outside, the tube very short, the lobes 6—8 mm. long. Style distinctly and rather abruptly thickened below the stigma. Ovary inferior, hispid when young. Fruit almost hemispherical, 2.5—4 mm. long, 3—5 mm. diameter, rounded or slightly retuse at the base, glabrescent but rough. Valves subobtuse, less than half as long as the calyx lobes and much shorter than the lower part.

The type is *Acocks* 15195 (K).

Sand at low levels near Clanwilliam.

Allied to *L. diffusa* but distinguished by the distant opposite narrow leaves, large flowers in a terminal umbel, and the large fruit with long calyx lobes and short valves.

CLANWILLIAM. Lamberts Bay, *Acocks* 15195 (K, PRE).

29. *L. nodosa* Buek in E. & Z. Enum. 376. 1837. *L. tenella* var. *longivalvis* A.DC. in DC. Prodr. 7. 418. 1839. *L. tenella* var. *microphylla* Sond. Fl. Cap. 3. 362. 1865. *L. tenella* var. *rigida* Sond. l.c. p.pte.

A rigid much branched diffuse or erect shrublet, up to 50 cm. high though commonly 15—30 cm., the branches often divaricate, the younger white or pale-coloured. Leaves alternate, fasciculate, reflexed, often distant, rather thick, ovate-lanceolate, 2—6 mm. long, 1—1.5 mm. wide, acute, concave above, the edges entire or with minute teeth. Inflorescence with rigid spreading branches, often spinous in the later phases. Flowers solitary, 1—5 to a branch, on slender pedicels 3—7 mm. long. Calyx lobes 2—3 mm. long, acute or mucronate. Corolla white, fading to yellow, often brownish outside, 5—8 mm. long, the tube very short, the lobes glabrous. Bases of the filaments ovate to lozenge-shaped, densely ciliate. Style blue, longer than the corolla, shortly hairy, gradually thickened to the top: stigma lobes 3, very short. Ovary less than half inferior, the lower part rounded or flattened, less than 1 mm. long, about 1.5 mm. diam. Fruit 5-ribbed, broader than long: valves as long as the calyx lobes, twice as long as the lower part.

The type is *Ecklon* s.n. (Port Elizabeth) in herb. Sonder, (S).

Rocky places in rather dry regions, especially on hills in and around the karroo.

The commonest and most wide-spread species. Rather variable in habit and in the branching of the inflorescence. Distinguished by the small reflexed leaves, the branched inflorescence, and half superior ovary. The leaves on the main stem often fall, only the axillary fascicles persisting. In the past much confused with *L. tenella* and *L. diffusa*, indeed Ecklon & Zeyher issued specimens under the latter name.

CALVINIA. Hantamsberg, *Drege* 6317a (S).

BARKLY WEST. Alexandersfontein, *Moran* (SAM): Smiths Mine, *Acocks* 111 (PRE): Daniels Kuil, *Esterhuysen* (BOL).

HAY. Griquatown, *Brueckner* 1058 (PRE): *Burchell* 1886 (K): Malansrust, *Acocks* 321 (PRE): Dunmurray, *Wilman* (SAM).

KIMBERLEY. Kimberley, *Acocks* 1621 (K): *Hutchinson* 3000 (BOL, K): *Wilman* (PRE): *Brueckner* 860 (PRE): *Marloth* 749 (PRE).

CARNARVON. Kareeberg, *Burchell* 1575 (K).

WILLISTON. Walkraal, *Acocks* 9635 (PRE): *Foley* 180 (PRE).

SUTHERLAND. Sutherland, *Compton* 19490 (NBG): Middelpost, *Lewis* (SAM): Riet Vlei, *Burchell* 1381 (K).

PHILLIPSTOWN. Orange River, *Burchell* 2675 (K, PRE): Barends River, *Burchell* 1381 (K): Potfontein, *Sidley* 76 (PRE).

DE AAR. Quaggafontein, *Story* 1079 (PRE): Potfontein, *Schweicherdt* 1197 (PRE).

COLESBURG. Colesburg, *Shaw* (K).

RICHMOND. Afrikashoogte, *Burke* (BM): *Zeyher* 1063 (CGE, G, K, SAM, BM).

MIDDELBURG. Grootfontein, *Theron* 722 (K, PRE): *Verdoorn* 1514 (PRE), 1736 (K, PRE), s.n. (BOL): Bangor Farm, *Bolus* (BOL): Middelburg, *Gill* 78 (PRE): Wapadsberg, *Adamson* 5282.

GRAAFF-REINET. Graaff-Reinet, *Bolus* (BOL): 15 (S): Oudeberg, *Bolus* 9 p.pte (BOL).

MURRAYSBURG. Murraysburg, *Tyson* 110 (BM): Koudeberg, *Adamson* 5197.

PEARSTON. Riet Vlei, *Story* 76 (PRE).

CRADOCK. Cradock, *Brynard* 303 (PRE): Gt. Fish River, *Zeyher* 1061 (BM, K, SAM).

MARAISBURG. Swartkei, *Baur* 991 (K).

SOMERSET EAST. Zuurburg, *Drege* (G, S).

QUEENSTOWN. Queenstown, *Galpin* 1791 (K): Shiloh, *Drege* (S): Camdeboosberg, *Drege* (S).

BEAUFORT WEST. Beaufort West, *Esterhuysen* 2373 (BOL): Rhenosterkop, *Burke & Zeyher* (K): *Zeyher* 1062 (BM, K, SAM): Nieuwveld, *Adamson* 5213, 5215-6-7-8-9-20: Nelspoort, *Pearson* 2099 (SAM).

LAINGSBURG. Witteberg, *Compton* 2653 (BOL), 2654 (NBG), 2785 (BOL): Rietvlei Kloof, *Compton* 8626 (NBG): Pietermeintjes, *Rogers* 17898 (PRE).

WORCESTER. Bonteberg, *Compton* 9946 (NBG): *Esterhuysen* 3653 (BOL, PRE): Karroo Garden, *Compton* 18280 (NBG): *Cross* 50 (NBG):

CERES. Visgat, *Stokoe* (SAM).

CALEDON. Genadendal, *Drege* (G).

LADISMITH. Huis River Mts., *Bond* 250 (NBG): Seven Weeks Poort, *Andreas* 1320 (PRE).

RIVERSDALE. Muiskraal, *Adamson* 4823, 4825 (PRE).

UITENHAGE. Zuurburg, *Drege* (K): Swartkops River, *Ecklon & Zeyher* 2358 (SAM): *Zeyher* 1008 (SAM), 2348 (BOL), 3128 (K, S, SAM): Uitenhage, *Harvey* 1008 (BM, CGE): Addo, *Ecklon* (S): *Long* 800 (PRE): *Ecklon & Zeyher* 2.11 (S): *Zeyher* 3119 (S).

PORT ELIZABETH. Port Elizabeth, *Ecklon* (S): *Long* 800 (K).

ALBANY. Grahamstown, *Daly & Sole* 360 (BM, PRE): *Hutchinson* 1596 (BOL, K, PRE): *MacOwan* 953 (BM, S, SAM), 1133 (K): *Rogers* 1516 (BM, K, SAM).

O.F.S.:

FAURESMTIH. Fauresmith, *Henrici* 2901, 2947 (K, PRE): *Pole-Evans* 1621 (PRE): *C. A. Smith* 5271, 5351, 5593A (PRE): Luckhoff, *Pole-Evans* s.n. (K), H13572 (PRE).

BLOEMFONTEIN. Bloemfontein, *Potts* 1896 (BM).

TRANSVAAL:

PRETORIA. Olifantsfontein, *Rehmann* 1465 (NBG): Hebron, *Flanagan* 1465 (NBG).

Without locality:—*Drege* 6308 (G, K, S): *Ecklon & Zeyher* 2357 (BM, G): *Harvey* (K): *Prior* (K): *Thunberg* (BM).

Also occurs in S.W. Africa.

30. *L. intricata* Dinter & Markgraf Bot. Notiz. Berlin 15. 467. 1941: 789. 1942: Bot. Jahrb. 75. 209. 1950. *L. Dinteri* Diels Fedde Rep. 18. 438. 1922. *non* Engl.

A compact much branched shrublet, 20—50 cm. high, usually gray-green. Leaves fasciculate, usually much crowded and completely hiding the stem rarely scattered, thick, 3—5 mm. long. Flowers solitary on rigid branches with scattered small leaves, the branches finally spinous. Calyx roughly hairy. Corolla white, translucent. Ovary superior, 3- or 4-chambered, flat at the base. Valves in fruit longer than the calyx lobes.

The type is *Dinter* 1471.

Rocky places at low altitudes in S.W. Africa and northern Namaqualand.

Like *L. nodosa* but with more crowded leaves and a superior ovary. Where the leaves are separated they are reflexed otherwise squarrose.

NAMAQUALAND. Elizabeth Bay, *Marloth* 4811 (PRE).

S.W. AFRICA. Lichtenstein, *Dinter* 3497 (BM, BOL, K, PRE): Aus, *Dinter* 6068 (BM, BOL, G, K, PRE): Gt. Karasberg, *Pearson* 8552 (K): Gucheb, *Schonfelder* 953 (PRE).

31. *L. tenella* Lodd. Bot. Cab. t.1038. 1825. *L. tenella* A.DC. Monog. Camp. 111. 1830. p.pt. *L. Loddigesii* A.DC. l.c. 114. *L. tenerrima* Buek in E. & Z. Enum. 375. 1837. *L. tenella* var. *tenerrima* Sond. Fl. Cap. 3. 567. 1865.

A diffuse or sprawling much branched shrublet, rarely erect. Stems slender, up to 50 cm. long, brown, shortly hairy. Leaves alternate, fasciculate, reflexed, lanceolate to ovate-lanceolate, 3—5 mm. long, 1—1.5 mm. wide, acute or acuminate, rather thick, concave above, usually entire. Leaves most commonly distant and shorter than the internodes. Flowering branches long, slender, often branched, the flowers not crowded, in a raceme-like inflorescence. Flowers solitary or paired: bracts very small: pedicels hairy, ranging from very short to 2.5 mm. long. Calyx lobes 1.5—2 mm. long, triangular-acute, slightly keeled, the edges slightly revolute. Corolla blue or blue-purple, rarely white, 5—8 mm. long, the tube very short, the lobes narrow, glabrous. Bases of the filaments broadly

rhombic, ciliate especially on the obtuse angles. Style deep blue, gradually thickened to the top. Ovary half-inferior, shortly hairy, the lower part rounded, 1 mm. deep, 2 mm. diameter. Fruit 3—4 mm. diameter, 1·5—2 mm long, distinctly ridged: valves 2—3 mm. long, longer than the spreading calyx lobes.

The type is *Lodd.* l.c. t.1038: that of *L. tenerrima* is *Zeyher* 3125 (S).

Dry stony or rocky places on low hills on the southern coastal belt.

There has been confusion in the application of the name of this species. Loddiges' plate delineates a single branch. His description is inadequate and there is no extant specimen. Careful comparison of the plate with specimens, however, leaves no doubt that it represents the same plant as *Zeyher* 3125, the type of *L. tenerrima* Buek, or *Drege* 6316 which was A. De Candolle's type of his *L. tenella*. This identification is supported by Loddiges' statements that the leaves of his plant are "deeply channelled" and that it might be confused with *L. oryccoides*. The last might conceivably occur with dried specimens but seems most unlikely with fresh ones.

In 1830 A. De Candolle renamed Loddiges' plant because he found it was not identical with the original *Campanula tenella* L.f. Unfortunately he retained the name, *L. tenella*, and redescribed it, though his description is based on two species. Part of it, and his figure, refers to *L. diffusa*. The only specimen in his herbarium, *Drege* 6316, is certainly the basis of the larger part of his description and is his type. This specimen is identical with *Zeyher* 3125, the type of *L. tenerrima*. It is to be noted that all the other specimens in A. De Candolle's herbarium are placed under varieties.

Sonder (l.c.) added to the existing confusion by treating *L. Loddigesii* as a synonym of his *L. ciliata* (*L. divaricata*). The species he described as *L. tenella* A.DC. is an aggregate made up for the most part of *L. diffusa*. He referred the plant represented by *Drege* 6316 and *Zeyher* 3125 to a variety.

CERES. Mitchell's Pass, *Bolus* (BM).

WORCESTER. Worcester, *Fine* G109 (PRE).

CALEDON. Palmiet River, *Bolus* 11585 (PRE): Hermanus, *Rogers* 26606 (PRE): Dasberg, *Stokoe* (SAM).

BREDASDORP. Cupidoskraal, *Adamson* 4326.

SWELLENDAM. Potteberg, *David* (BOL, NBG): Rietkuil, *Zeyher* 3125 (K, S, SAM): Zuurbraak, *Galpin* 4304 (PRE).

MONTAGU. Kogmans Kloof, *Ecklon & Zeyher* 94.12 (S): Coo, *Compton* 10275 (NBG): Road to Barrydale, *Walgate* (BOL).

LADISMITH. Roodeberg, *Adamson* 5170: Seven Weeks Poort, *Primos* 70 (PRE).

HEIDELBERG. Heidelberg, *Ecklon & Zeyher* (S): *Pappe* (SAM).

RIVERSDALE. Riversdale, *Bolus* 11326 (BOL, K): *Muir* 2629 (PRE): *Schlechter* 1889 (CGE), 2474 (PRE): *Pappe* (K).

OUDTSHOORN. Outeniqua Mts., *Esterhuysen* 19505 (BOL, PRE): Swartberg Pass, *Bolus* 11585 (BOL, PRE).

PRINCE ALBERT. Road to Klaarstroom, *Leipoldt* (BOL).

UNIONDALE. Avontuur, *Schonland* 3364 (PRE): Braak Kloof, *Bolus* (BOL): Uniondale Kloof, *Adamson* 5187: Haarlem, *Fourcade* 6242 (BOL): Prince Alfred's Pass, *Stokoe* (SAM): Mannetjeberg, *Esterhuysen* 6480 (BOL): Kamanassie, *Esterhuysen* 16488 (BOL).

WILLOWMORE. Baviaans Kloof, *Adamson* 5194.

MURRAYSBURG. Murraysburg, *Tyson* 110 (SAM).

HUMANSDORP. Kouga Hills, *Esterhuysen* 6691 (BOL).

UITENHAGE. Swartkops River, *Ecklon & Zeyher* 2350 (BOL): (S): Uitenhage, *Harvey* (K).

PORT ELIZABETH. Redhouse, *Paterson* 323 (BOL): Sundays River, *Bolus* 9 p.pte (BOL): Coega, *Rogers* 1342 (PRE).

SOMERSET EAST. Zuurberg, *Drege* 6316 (G): Windvogelberg, *Drege* (S).

Var. *montana* Adamson var. nov.

A typo differt caulibus tenuioribus herbaceis, foliis planis, floribus paucis albis, ovario infero.

Stems sprawling or prostrate, herbaceous or woody at the base only. Leaves not thickened, flat, usually toothed. Flowers few, on long slender branches: pedicels 0.5 cm. long. Corolla white, blue or purple outside. Bases of the filaments ovate-acuminate, densely ciliate. Ovary almost wholly inferior, hemispherical or pointed at the base.

The type is *Adamson* 4889 (BOL).

Rocks on mountain tops. Only found on the summit of the Swartberg Pass. *Adamson* 4889.

32. *L. rigida* Adamson sp. nov.

Frutex erecta. Folia alterna rigida squarroso-recurvata non fasciculata. Flores subumbellati raro solitarii pedicellis rigidis tandem spinescentibus. Corollae tubus perbrevis. Ovarium semi-inferum, triloculare. Valvae fructus lobis calycis breviores.

A rather stout erect rigid branching shrublet, up to 60 cm. high, the branches ascending. Stems gray-brown, shortly pubescent. Leaves alternate, mostly not fasciculate, rigid, squarrose-recurved, 1.5—3 mm. long, 1—2 mm. wide, rather thick, acute or shortly mucronate at the tip, the edges thickened, entire. Leaves crowded on the lower parts and lateral

branches but distant on the flowering branches. Flowers terminal, occasionally solitary, more often in umbel-like groups with rigid finally spinous branches 0·5—2 cm. long; pedicels 0·2—0·4 cm. long. Calyx lobes acute, 2—2·5 mm. long, usually revolute at the edges. Corolla white, blue or purple outside, 5—7 mm. long; tube very short; lobes hairy at the tips and on the middle line. Bases of the filaments elliptic-rhombic, acute, densely ciliate on the lateral bulges. Style blue, thickened at the top. Ovary half-inferior, usually hairy. Valves in fruit 2 mm. long, shorter than the calyx lobes, as long as or longer than the lower part.

The type is *Adamson* 5169 (BOL).

Dry rocky mountain slopes, especially on ranges near the margin of sclerophyll vegetation.

Taller, stouter and more rigid than most of the species. Distinctive in habit, leaf, and inflorescence. Previously confused with *L. nodosa* and *L. diffusa*.

CERES. Cold Bokkeveld, Klein Vlei, *Schlechter* 10202 (BM, G, K, PRE): Elands Kloof, *Levy* 5115 (CT): Rosendalfontein, *Pillans* 9692 (BOL): Schurftberg, *Pillans* 9594, 9695 (BOL): *Schlechter* 1995 (PRE).

WORCESTER. Matroosberg, *Phillips* 2013 (SAM): Onklaarberg, *Stokoe* (PRE): Karadouw Mt., *Esterhuysen* 10911 (BOL).

LAINGSBURG. Witteberg, *Compton* 2765 (K).

MONTAGU. Wagonboomsberg, *Adamson* 5101.

CALEDON. Bosjesveld Mts., *Stokoe* 7582 (BOL): Genadendal, *Burchell* 7845 (K).

SWELLENDAM. Pottberg, *Adamson* 4806.

LADISMITH. Roodeberg, *Adamson* 5169; *Compton* 3848 (BOL): *Lewis* (SAM).

PRINCE ALBERT. Swartberg Pass, *Adamson* 4876, 4881, 4995 (PRE): *Bolus* 11586 (BOL): *Stokoe* 8656 (BOL), s.n. (PRE, SAM).

WILLOWMORE. Baviaanskloof, *Adamson* 5193.

MOSSEL BAY. Dwyka River, *Burchell* 6398 (K).

UNIONDALE. Uniondale, *Bolus* 9 (K): s.n. (BOL): Hot Springs, *Esterhuysen* 6274 (BOL): Joubertinia, *Fourcade* 5071 (BOL): Smutsberg, *Esterhuysen* 10756 (BOL): Slypsteenberg, *Esterhuysen* 6667 (BOL): De Hoek, *Esterhuysen* 10648 (BOL).

HUMANSDORP. Zuur Anysberg, *Fourcade* 3030 (BOL): Kouga Hills, *Esterhuysen* 10795 (BOL): *Fourcade* 5071 (BOL, K): Quagga, *Story* 2324 (PRE).

UITENHAGE. Uitenhage, *Harvey* (K).

Without locality:—*Drege* 6318 (S): *Sieber* (S): *Sparrmann* (S).

33. *L. microphylla* Adamson sp. nov.

Suffrutex ramosissima, ramis pedicellis ovarisque brevissime puberulis. Folia parva congesta squaroso-recurvata vix reflexa. Flores terminales solitarii in ramis brevibus subumbellatis positi. Tubus corollae perbrevis. Filamentorum bases cruciformes. Ovarium semi-inferum triloculare. Valvae calycis lobis duplo longiores.

A low much-branched woody shrublet up to 25 cm. high. Stems, pedicels and ovaries covered with very short hairs. Leaves crowded, small, 1—2 mm. long and about as wide, squarrose-recurved, not reflexed, rigid, thick, concave above. Flowers solitary on short branches in a terminal umbellate group. Pedicels rigid, 3—5 mm. long. Calyx lobes thick, triangular, acute, 1 mm. long, usually spreading. Corolla 5—6 mm. long, white, blue or purplish outside, the tube very short, the lobes spreading, glabrous. Bases of the filaments cruciform, shortly ciliate. Ovary 3-chambered, less than half inferior. Fruit 1—1.5 mm. long, 1.5—2 mm. diameter, narrowed to the base: valves twice as long as the calyx lobes.

The type is *Maquire* 834 (NBG).

Sandy soils at low altitudes. Only found in the Bontebok Park, Bredasdorp, *Maquire* 834 (NBG).

A distinctive species usually bluish-green in colour. Leaves almost completely hiding the stems. Distinguished by the very small squarrose leaves, very short calyx lobes, cruciform filaments, and semi-inferior ovary with valves much longer than the calyx lobes.

34. *L. pauciflora* Adamson sp. nov.

Suffrutex diffusa ramosissima ramis ascendentibus. Folia parva, alterna fasciculata distantia. Flores pauci laxi racemosi pedicellis foliis longioribus. Corolla alba tubo perbreve. Ovarium semisuperum, basi rotundatum. Valvae lobis calycis longiores.

A slender wiry erect much branched shrublet up to 40 cm. high. Branches ascending, shortly pubescent. Leaves fasciculate, alternate, scattered, very short, 1.3—2 mm. long, spreading, rather thick, flat or slightly concave above, bulged below, entire or obscurely toothed at the base. Flowers few, 1—3, terminal and in the uppermost axils of very slender branches: pedicels 4—8 mm. long, often with a very small leaf. Calyx lobes 1.5 mm. long. Corolla white, blue outside, 4 mm. long, the lobes narrow, hairy, the tube very short. Bases of the filaments oblong, acute, thinly ciliate. Style hairy, gradually thickened upwards. Ovary half-inferior, the lower part rounded. Fruit 1.5 mm. diameter, less than 1 mm. long: valves 1.5—2 mm. long, distinctly longer than the calyx lobes.

The type is *Adamson* 4832 (BOL).

Sandy flat on mountains. Confined to the northern side of the Langeberg near Riversdale.

A distinctive species in habit, very small leaves, few flowers, half superior ovary and long valves in the fruit.

RIVERSDALE. Garcias Pass, *Adamson* 4370, 4832.

35. ***L. planifolia*** Adamson sp. nov.

Caules procumbentes hispidi pauciramosi. Folia alterna non fasciculata plana denticulata. Inflorescentia ramosa ramis tenuibus paucifloris. Calycis lobi denticulati marginibus hyalinis. Corollae tubus perbrevis. Ovarium hispidulum turbinatum. Valvae lobis calycis brevioribus.

Slender, prostrate or sprawling, woody at the base only. Stems hispid, up to 40 cm. long. Leaves alternate, not fasciculate, spreading or partly reflexed, flat, ovate-oblong, 4—5 mm. long, 2—3 mm. wide, subcordate at the base, acute, the edges toothed, thickened, and slightly revolute. Inflorescence with slender branches 2—3 cm. long; pedicels 5—8 mm. long. Calyx and ovary hispid. Calyx lobes 2 mm. long, the edges toothed and minutely hyaline. Corolla white, blue-purple outside, 5—7 mm. long, the tube very short, the lobes hairy. Bases of the filaments obovate, slightly ciliate. Ovary inferior, hemispherical. Valves shorter than the calyx lobes.

The type is *Adamson* 4844 (BOL).

Damp places in mountain kloofs near Riversdale.

A distinctive species readily known by the habit, hispid stems, flat spreading leaves and branched inflorescence. It bears some resemblance to *L. Thunbergiana* but is quite different in leaf, corolla, and ovary.

RIVERSDALE. Riversdale, *Muir* 2628 (PRE); Garcias Pass, *Adamson* 4844.

Ser. 9. ***Thunbergianae*** Adamson ser. nov.

Suffrutices. Folia plana reflexa. Inflorescentia ramosa, floribus solitariis. Corollae tubus lobis calycis aequilongus. Ovarium triloculare.

Shrublets. Leaves flat, rather thin, usually reflexed. Inflorescence branched. Corolla with a tube about as long as the calyx lobes. Ovary 3-chambered.

The type species is *L. Thunbergiana* Buek.

KEY TO THE SPECIES.

- | | |
|--|---------------------|
| 1. Stout, woody, gray-green: leaves with a thickened border,
entire: inflorescence branches rigid: ovary half superior .. | <i>Thunbergiana</i> |
| 1. Slender, green: leaves not bordered, toothed: inflorescence
branches very slender: ovary inferior | <i>brachiata</i> |

36. **L. Thunbergiana** Buek in E. & Z. Enum. 376. 1837. *L. anomala* A.DC. in DC. Prodr. 7. 418. 1839.

A diffuse or erect gray-green woody shrublet with lax ascending branches. Stems shortly hairy, 15—50 cm. high. Leaves alternate, not fasciculate, reflexed, flat, linear, 0·8—1·5 cm. long, 1—2 mm. wide, usually as long as or longer than the internodes, the edges thickened and entire or with very minute teeth. Inflorescence branched, the branches spreading or divaricate, rigid, ultimately spinous. Flowers solitary, on rigid pedicels 3—9 mm. long, longer than the small leaf-like bracts. Calyx lobes 2—3 mm. long, acute, slightly keeled, the edges revolute and toothed at the base. Corolla white, fading to yellowish, sometimes purple outside, 6—8 mm. long, the tube about 2 mm. long, the lobes slightly hairy on the mid line. Bases of the filaments oblong, subobtuse, often cucullate at the top, densely ciliate. Style coarsely hairy, thickened at the top. Ovary hairy, half-superior, the lower part less than 1 mm. long, bulged below the calyx lobes and retuse at the base. Fruit 2 mm. diam., the valves slightly shorter than the spreading calyx lobes.

The type is *Ecklon & Zeyher* 2359 in herb. Sonder (S); of *L. anomala* Drege 166b (G).

Among bushes or on rocks at the margins of the karroo.

A distinctive species of rather dry habitats, easily recognised by the scattered flat linear reflexed leaves, branching inflorescence and half superior ovary. Where growing among bushes the stems may be as much as 1·5 m. long. Flowers in spring, much earlier than most of the species.

NAMAQUALAND. Concordia, *Thorne* (NBG): *Spektakel*, *Compton* 11514 (NBG): *O'Kiep*, *Bolus* 486 (BM, BOL, K, G, SAM), 6520 (K): *Brakdam*, *Barker* 1195 (NBG): *Wallekraal*, *Pillans* 18138 (PRE), s.n. (BOL): *Bowesdorp*, *Stokoe* (PRE): *Kamieskroon*, *Adamson* 5052-3 (PRE): *L. Bolus* (BOL, K): *Compton* 6811 (NBG): *Garies*, *Acocks* 14925 (K, PRE): *Compton* 17181 (NBG): *Esterhuysen* 6435 (BOL): *Lewis* (SAM): *Levyms* 1130 (NBG), 4078 (CT): *Stokoe* (SAM): *Kamiesberg*, *Esterhuysen* 1350 (NBG): *Leliefontein*, *Drege* 166 (S), 166b (BM, G, K, S): without locality, *Ecklon & Zeyher* (SAM).

VAN RHYNSDORP. Van Rhynsdorp, *Kolbe* (BOL): *Kareeberg*, *Schlechter* 1122 (PRE), 8231 (BM, BOL, G, K, PRE): *Giftberg*, *Pearson* 6531 (BOL).

WORCESTER. Veld Reserve, *Acocks* 15246 (K, PRE): *Leighton* 1995 (PRE): *Mowers Siding*, *Acocks* 14543 (PRE): *Matroosberg Stn.*, *Adamson* 5095.

MONTAGU. Koo, *Adamson* 5104: *Compton* 3888 (BOL): *Montagu*, *Adamson* 5112: *Levyms* 512 (CT).

LADISMITH. Ladismith, *Salter* 6327 (K).

HEIDELBERG. Barriedale, *Adamson* 5112: Warmwaterberg, *Adamson* 5126, 5130: Lemoenshoek, *Adamson* 5137.

RIVERSDALE. Gouritz River, *Ecklon & Zeyher* 2359 (G, S, SAM). OUDTSHOORN. Oudtshoorn, *Bolus* (BOL).

GRAAFF-REINET. Graaff-Reinet, *Bolus* 15 (BOL).

MURRAYSBURG. Murraysburg, *Tyson* 322 (BM, BOL).

Without locality:—*Drege* 9139b (G).

37. *L. brachiata* Adamson sp. nov.

Procumbens ramosa. Folia alterna, lineari-oblonga denticulata reflexa inferiora congesta fasciculata, superiora distantia non fasciculata. Inflorescentia terminalis ramis filiformibus late dichotomis internodiis longis. Bracteae foliis similes reflexae. Corollae tubus lobis calycis aequilongus. Ovarium inferum hemisphericum vel turbinatum. Valvae lobis calycis breviores.

Stems slender, prostrate, 15—30 cm. long, with very slender erect branches, the upper parts and inflorescence zigzag with long internodes. Leaves alternate, linear-oblong, 5—8 mm. long, 1—2 mm. wide, reflexed, the margins very slightly revolute, with 2—3 pairs of sharp teeth in the lower half. Lower leaves crowded, fasciculate, the upper distant, solitary. Leaves on the side branches spreading. Inflorescence zigzag, with long slender internodes 1—1.5 cm. long, and divaricate or widely forking branches. Flowers solitary. Pedicels filiform, very shortly pubescent. Calyx lobes 3—4 mm. long, acute, obscurely denticulate. Corolla 1—1.4 cm. long, blue or violet, the tube as long as the calyx lobes. Bases of the filaments ovate-acuminate, less than 1 mm. long. Style glabrous, very slightly thickened at the top. Ovary inferior, hemispherical or turbinate. Valves half as long as the calyx lobes.

The type is *Pott* 4707 (PRE).

In the mist belt on mountains in the northern Transvaal.

A distinctive species somewhat isolated geographically from its allies.

PIETERSBURG. Haenertsberg, *Schlechter* 5477 (PRE): Woodbush, *Pott* 4707 (PRE).

Ser. 10. *Adpressae* Adamson ser. nov.

Suffrutices ramosi, ramis floriferis elongatis paucifoliatis. Folia rigida denticulata reflexa vel recurvata, in ramis floriferis perdistantia. Flores pedicellati solitarii. Corollae tubus saepe lobis calycis longior. Ovarium semi-inferum trilobulare.

Glabrous woody shrublets with elongated flowering branches. Leaves rigid, denticulate, concave above, crowded below but very distant on the flowering branches. Flowers pedicellate. Corolla tube often longer than the calyx lobes. Ovary inferior or half-inferior, rounded below, 3-chambered.

The type species is *L. adpressa* A.DC.

KEY TO THE SPECIES.

1. Leaves not fasciculate: corolla tube longer than the calyx lobes.
2. Leafy stems branched at the top only: flowering branches not divaricate *adpressa*
2. Stems branched all along: flowering branches with divaricate branchlets, ultimately spinous *asparagoides*
1. Leaves fasciculate: corolla tube very short: branches divaricate, the flowering very numerous, very slender *effusa*

38. **L. *adpressa*** (Thb.) A.DC. Monog. Camp. 110. 1830. *Campanula adpressa* Thunb. Prod. Pl. Cap. 38. 1794. *Wahlenbergia adpressa* Sond. Fl. Cap. 3. 583. 1865.

An erect or sprawling woody shrublet, up to 60 cm. high. Stems several from the tap-root, stout, glabrous, branched at the top only. Leaves crowded on the main stem, scattered on the branches, squarrose or recurved but reflexed when old, glabrous, decurrent, rigid, 8—11 mm. long, 2 mm. wide, concave above, sharply toothed on the edges. Inflorescence a many-branched panicle, the main branches ascending, 5—30 cm. long, green, with scattered decurrent leaves 5—6 mm. long, the upper parts and secondary branches with minute leaves 1—2 mm. long. Calyx glabrous, the lobes 1—1.5 mm. long, acute, slightly incurved when young but revolute at the fruiting stage. Corolla white fading to yellowish, 6—7 mm. long, the tube 3 mm. long, about twice as long as the calyx lobes, the lobes spreading or recurved, parallel-sided, often with blue streaks on the back. Bases of the filaments oblong, acute, shortly but densely ciliate. Style slightly longer than the corolla, blue, thickened towards the top. Ovary half-inferior, hemispherical below, conical above, smooth, glabrous. Fruit about 2.5 mm. diameter, the valves obtuse, longer than the calyx lobes. Seeds ovoid-cylindrical, smooth, brown.

The type is in herb. *Thunberg*, Uppsala.

Sandy flats, especially near the sea, in the south-west.

In the later stages the leaves on the main stem dry up but those on the panicle and panicle branches remain green. Rather variable in size and in the number, length and division of the flowering branches.

Though originally placed in *Lightfootia* by A. De Candolle with a query, it is retained there on account of the habit, leaves, narrow corolla lobes, and long style. Its nearest allies certainly belong to the genus. Sonder transferred it to *Wahlenbergia* but it was not included by von Brehmer in his revision of the African species.

HOPEFIELD. Saldanha Bay, *Compton* 17888 (NBG): Hopefield, *Bachmann* 429 (BOL).

CAPE. Cape Flats, *Rehmann* 1945 (BM): Tygerberg, *Moss* 9060 (BM): Milnerton, *L. Bolus* (BOL, K): Lange Vallei, *Ecklon & Zeyher* (SAM): Hout Bay, *Compton* 14399 (BOL, NBG, PRE): Retreat, *Adamson* 5223:

Lewis (SAM): Muizenberg, *Salter* 292,4 (BM, BOL, K): Zeekoe Vlei, *Salter* 3993 (BM, BOL, K).

WORCESTER. Uitkomst, *Zeyher* 1064 (BM, BOL, CGE, G, K, SAM).
Without locality:—*Ecklon & Zeyher* 2348 (SAM).

39. ***L. asparagoides*** Adamson sp. nov.

Suffrutex glabra ramosissima, ramis longis ultimis divaricatis tandem subspinescentibus. Folia nonfasciculata, alterna patentia vel recurvata. Flores pauci. Calycis lobi breves acuti corolla quadruplo breviores. Corollae tubus lobis calycis longior. Ovarium inferum turbinatum, valvis lobis calycis paulo brevioribus.

Sprawling. Stems green, many from a woody root, up to 1 m. long, much branched, the ultimate branchlets divaricate and finally more or less spinous. Leaves alternate, not fasciculate, the lower 2—4, rarely 5—7 mm. long, rigid, spreading or falcate-recurved, concave above, the edges thickened and obtusely toothed, the upper much smaller. Lower leaves as long as or longer than the internodes, the upper distant, often 1—1.5 cm. apart. Flowers at the tips of the branchlets: pedicels 2—3 mm. long. Calyx lobes 1—1.5 mm. long, acute or mucronate. Corolla white, glabrous, 5—7 mm. long, the tube 2.5—3 mm. long, almost as long as the lobes. Bases of the filaments elliptic-oblong, not bulged at the sides, acute, densely ciliate. Ovary inferior, hemispherical or slightly narrowed at the base. Valves slightly shorter than the reflexed calyx lobes.

The type is *Adamson* 5036 (BOL).

Sandy flats near the sea in Namaqualand.

Allied to *L. adpressa* but quite different in habit and inflorescence.

NAMAQUALAND. Witbank. *Pillans* 5344 (BOL, K): Hondeklip Bay, *Pillans* 18131 (PRE), s.n. (BOL): Wallekraal, *Adamson* 5036.

CLANWILLIAM. Ebenezer, *Drege* 6309 (BM, CGE, G, K, S): Flats, *Leipoldt* 4347 (BOL, K, PRE).

40. ***L. effusa*** Adamson sp. nov.

Suffrutex ramosissima, caulibus lignosis, ramis ultimis filiformibus. Folia alterna fasciculata reflexa linearia denticulata. Rami floriferi filiformes. Ovarium hemisphericum, valvis lobis calycis aequilongis.

Stems many from the root, woody, with divaricate branches. Leaves alternate, fasciculate, reflexed or recurved, linear, 8—11 mm. long, 1—2 mm. wide, concave above, toothed all along the edges. Flowering branches numerous, much branched, very slender, with small distant leaf-like bracts. Flowers small, distant, on pedicels 0.5—1.5 cm. long. Calyx lobes 1.5 mm. long, with an outturned mucro at the tip. Corolla white, 4 mm. long, the tube very short. Style distinctly thickened at the top.

Ovary inferior, glabrous, hemispherical. Fruit 1·5 mm. long; valves about as long as the spreading calyx lobes.

The type is *Levyns* 5516 (CT).

Kloofs at the foot of the Langeberg near Robertson.

In the fasciculate leaves and short corolla tube this approaches Series *Tenellae*.

ROBERTSON. Poesjanets River, *Levyns* 5516 (CT).

Ser. 11. **Rupestres** v. Brehm. l.c.

Tall herbs or sometimes woody. Leaves ovate-lanceolate, sessile. Flowers sessile or nearly so, in terminal groups or a compound spike or head. Ovary inferior, usually 3-chambered, hemispherical or turbinate, about as wide as long.

The type species is *L. glomerata* Engl.

KEY TO THE SPECIES.

- | | |
|--|------------------|
| 1. Woody at the base: glabrous: leaves broad-based, clasping,
decurent: flowers spicate or paniculate | <i>Huttonii</i> |
| 1. Herbaceous: hispid: leaves spreading, narrowed to the base:
flowers in a compound head or spike | <i>glomerata</i> |

41. **L. Huttonii** Sond. Fl. Cap. 3. 556. 1865. *L. corymbosa* O. Kuntze Rev. Gen. Pl. 3. 2. 188. 1893.

Stems erect, rigid, 20—50 cm. high, many from a woody base, either unbranched or branched at the top, densely covered with leaves. Leaves ascending, sessile, linear-lanceolate, 0·7—2·5 cm. long, 0·2—0·5 cm. wide, almost cordate at the base and clasping, entire, decurrent, the edges thickened and often ciliate. Inflorescence a compact terminal spike, a spicate panicle, or with ascending candelabra-like branches up to 10 cm. long. Flowers on very short erect pedicels. Calyx lobes 2—3·5 mm. long, acute, revolute at the edges. Corolla blue, mauve or purple, the tube 1—1·5 mm. long, the lobes narrow, 6—7 mm. long. Bases of the filaments narrow-oblong with obtuse projections at the top, densely ciliate. Ovary inferior, conical, 3-chambered. Fruit conical, the valves shorter than the calyx lobes.

The type is *Bowker* (Katberg) in herb. Sonder (S).

Grassveld and savannah in the eastern regions.

There is considerable variation in the inflorescence with all stages from an unbranched spike to a lax corymb with long branches. *L. corymbosa* is merely a form with a lax inflorescence. Robust forms may have leaves as much as 0·8 cm. wide.

CAPE:

FORT BEAUFORT. Katberg, *Bowker* (S): *Galpin* 2062 (PRE).

KEISKAMA. Keiskamahoeck, *Story* 3325 (PRE).

STUTTERHEIM. Dohne, *Flanagan* 2283 (BOL, SAM).

CATHCART. Gaikakop, *Dyer* 1981 (PRE): *Schonland* 4467 (PRE):
Toise River, *Flanagan* 2283 (K, PRE).

KENTANI. Kentani, *Pegler* 1081 (BM, BOL, K).

ENGCOBO. Engcobo Mt., *Flanagan* 2688 (PRE).

UMTATA. Barizaberg, *Baur* 596 (K, SAM).

O.F.S.:

HARRISMITH. Van Reenens Pass, *Penther* 2760 (BM): *Sankey* 148
(K): *Wood* 5726 (K).

NATAL:

ALFRED. Harding, *Ward* 167 (PRE).

UNDERBERG. Underberg, *McClellan* 613 (PRE).

UMZINI. Dumissa, *Rudatis* 878 (BM, K).

DURBAN. Pinetown, *Wood* (PRE).

LION RIVER. Fields Hill, *Wood* 460 (BM), 1967 (K, SAM):
Amaschanga, *Wood* 4599 (K).

KRANTZKOP. O. Kuntze (K).

WEENEN. Hlatikulu, *Acocks* 11375 (BM, PRE): *Howick*, *Wood* (G).

BERGVILLE. Drakensberg, *Evans*, *M. S.* 367 (K), 647 (K).

PIET RETIEF. Iswalpe. *Sidey* 1606 (PRE): *Piet Retief*, *Sidey* 2061
(PRE): s.l. *Gerrard* 748 (K).

TRANSVAAL:

WAKKERSTROOM. Vlakfontein, *Rogers* 11544 (PRE): *Volks Hill*,
Galpin 9852 (PRE).

BARBERTON. Barberton, *Davison* 119 (PRE): *Galpin* 582 (BOL,
K, PRE): 1038 (K, PRE): *Rogers* 24035 (K): *Thornicroft* 3121 (PRE):
Wood 4288 (K).

NELSPRUIT. White River, *Hafstrom & Acock* 1475 (PRE): *Nels-*
hoogde, *Codd* 8155 (PRE).

PILGRIM'S REST. Mt. Andrews, *Smuts & Gillett* 2388 (PRE):
Maacheberg, *Smuts & Gillett* 2336 (PRE).

LYDENBURG. Nelsberg, *Taylor* 1882 (PRE): *Kemps Heights*,
Codd 8311 (PRE).

PIETERSBURG. Woodbush, *Mogg* 14669 (PRE): *Wager* (PRE).

SWAZILAND. Mbabane, *Bolus* 12096 (BOL, K), 12097 (BOL, K):
Compton (K): Nottingham Road, *Saltmarshe* 1047 (BOL, PRE, SAM):
Havelock Concession, *Galpin* 1047 (K, PRE): *Forbes Reef*, *Roberts* (PRE),
s.l. *S. A. Stewart* (BM).

Without locality:—*Cooper* 2657 (K): *Mudd* (K).

42. **L. glomerata** Engl. Bot. Jahrb. 19. Beibl. 47. 52. 1894.

A stout hispid herb, 30—50 cm. high. Leaves oblong or oblong-lanceolate, spreading, 1·5—3·5 cm. long, 0·3—0·8 cm. wide, rather thin, the edges thickened and revolute. Flowers sessile in a compact spike-like head, either solitary or in groups, 1—3 cm. long, 1—1·5 cm. diameter. Bracts like small leaves, hispid, as long as the flowers. Calyx lobes hispid, 2—3 mm. long. Corolla blue or violet, 5—6 mm. long, the tube very short. Bases of the filaments rhombic with obtuse rounded angles. Ovary inferior, hemispherical, glabrous.

The type is *Holst* 3182 in herb. Berlin.

Throughout east Central Africa, doubtfully recorded in Zululand.

No specimens have been seen but *Wood* 928 and *Gerstner* s.n. are so named in the Natal herbarium.

Ser. 12. **Abyssinicae** Adamson nom. nov. *Laxiflorae* v. Brehm. l.c.

Tall herbs. Leaves oblong or lanceolate, numerous at the base, few small and distant above. Flowers pedicellate, in a lax panicle. Ovary inferior, 3-chambered.

Only local species *L. abyssinica*.

43. **L. abyssinica** Hochst. Flora 24. 1. 1841. Rich. Tent. Fl. Abyss. 2. 1. 1847.

A tall branched herb, 30—60 cm. high, usually hairy below, glabrous above. Leaves many near the base, few and small above: lower leaves oblong-lanceolate, 1·5—4·5 cm. long, 0·2—1 cm. wide, the edges thickened, slightly revolute, minutely toothed, more or less hispid below. Inflorescence elongated, simple or branched: flowers in groups in the axils of small bracts. Pedicels short or long, simple or branched. Calyx lobes 2 mm. long, acute, more or less revolute at the edges. Corolla 4—6 mm. long, white, mauve, blue or yellowish, the tube 1—1·5 mm. long. Ovary inferior, hemispherical. Fruit with valves shorter than the calyx lobes, much shorter than the lower part.

The type is *Schimper* 232.

Throughout Central Africa. In the Union confined to Zululand.

NATAL. Zululand, Ntuzini, *Wood* 11385 (BOL, SAM).

Seri. 13. **Marginatae** v. Brehm. l.c.

Tall herbs coarsely hairy. Leaves oblong-lanceolate. Flowers sessile in axillary groups or heads. Ovary inferior, 3-locular.

The type species is *L. marginata* A.DC.

44. **L. marginata** A.DC. Ann. Sc. Nat. Bot. 5. 6. 326. 1866.

A stout coarsely hairy herb up to 75 cm. high. Stems ridged. Leaves oblong-lanceolate, the lower 1—3 cm. long, 0·3—0·6 cm. wide, the upper

smaller, all ascending, revolute at the edges and toothed. Flowers in sessile axillary groups in the axils of bracts like leaves but much smaller: groups opposite or alternate, close or distant. Flowers hispid. Calyx lobes revolute. Corolla blue, hairy outside, the tube short. Ovary inferior, slightly pointed at the base, with distinct longitudinal ridges.

The type is *Wehwitsch* 1156 (K).

Found in S.W. Africa and Rhodesia but not so far recorded within the Union.

Section 2. **PHYTEUMOIDES** Adamson comb. nov. *Wahlenbergia* sect. *Phyteumoides* A.DC. in DC. Prod. 7. 441. 1839.

Virgate herbs with scattered leaves small and distant in the upper parts. Inflorescence lax, raceme-like, usually unbranched. Corolla 8 mm. or more long, with a tube as long as the calyx lobes. Ovary inferior, 2-chambered, obconical. Fruit elongated, cylindric-conical, thin-walled, the valves short.

Only series 14. **Juncea** v. Brehm. l.c.

The type species is *L. juncea* Sond.

KEY TO THE SPECIES.

- | | | |
|--|----|------------------|
| 1. Leaves less than 2 cm. long: flowers sessile or nearly so | .. | <i>juncea</i> |
| 1. Leaves over 2 cm. long: flowers on long pedicels | .. | <i>laxiflora</i> |

45. **L. juncea** (Buek) Sond. Fl. Cap. 3. 563. 1865. *Prismatocarpus junceus* Buek in E. & Z. Enum. 383. 1837. *Wahlenbergia spicata* E. Mey. ex A.DC. in DC. Prod. 7. 441. 1839.

A tall slender virgate herb. Stems many from a woody base, erect, up to 50 cm. high. Leaves alternate, close below, distant above, decreasing in size from the base upwards: lower leaves elliptic-lanceolate or oblong, up to 2 cm. long, 2—4 mm. wide, the upper much smaller. Leaves entire, with thickened revolute edges, slightly hispid below. Flowers in a lax raceme-like inflorescence, sessile or very shortly pedicellate, either solitary or in cymose groups in the axils of small bracts. Calyx lobes 2—3 mm. long, acute, ciliate, distinctly connate at the base, bending out abruptly at the top of the ovary. Corolla usually white, 0·8—1 cm. long, the tube as long as the calyx lobes. Bases of the filaments oblong, obtusely 3-lobed at the top, shortly but densely ciliate. Ovary inferior, 2-chambered, conical, 1·5—2 mm. long, with slender longitudinal ribs. Fruit 0·4—1 cm. long, cylindrical-conical, thin-walled, glabrous: valves short about half as long as the calyx lobes.

The type is *Ecklon & Zeyher* (Klipplaat River) in herb. Sonder (S).

Rocky places in the eastern grassveld.

ALBANY. Albany, *Bowker* (K).

- FORT BEAUFORT. Kromie River, *Acocks* 11903 (PRE).
 STUTTERHEIM. Dohne, *Acocks* 9198 (PRE).
 KING WILLIAM'S TOWN. King William's Town, *Compton* 19339 (NBG); *Hutchinson* 1700 (K).
 QUEENSTOWN. Queenstown, *Bolus* (BOL); *Galpin* 1670 (K, PRE);
 Shiloh, *Baur* 868 (K); Imvane, *Baur* 83 (K).
 TARKA. Tarkastadt, *Acocks* 16283 (K, PRE).
 XALANGA. Cala, *Pegler* 1667 (BOL).
 ALIWAL NORTH. Jamestown, *Barker* 2113 (NBG); Elandshoek,
F. Bolus 177 (K); *Bolus* 10525 (K).
 GLEN GREY. Klipplaat River, *Ecklon & Zeyher* s.n. (S), 2400 (G,
 SAM).
 GRAAFF-REINET. Sneeuwberg, *Bolus* 222 (BOL, SAM).
 NATAL. Ladysmith, *Hill* (K).
 Without locality:—*Barton* (Eastern Frontier) (K); *Cooper* 1808
 (British Kaffraria) (K); *Drege* (BM, G, K).

46. *L. laxiflora* Sond. Fl. Cap. 3. 564. 1865.

Like *L. juncea* but more slender and more branched. Leaves linear, 5—6 cm. long, 1—2 mm. wide, rather crowded near the base, more distant above, the upper 1—1.3 cm. long and 1 mm. wide. Flowers in a lax, often secund, raceme-like group, on slender ascending pedicels 0.5—2 cm. long. Pedicels with 2 small bracts, occasionally with axillary flowers. Calyx lobes triangular, acute, 1—2 mm. long, ciliate, not obviously connate. Corolla 0.8—1.2 cm. long, the tube 0.3 cm. long, longer than the calyx lobes. Ovary narrow, 3—4 mm. long. Fruit as in *L. juncea* but up to 1.8 cm. long: valves obtuse, shorter than the calyx lobes.

The type is *Hutton* s.n. in herb. Sonder (S).

Rare on grassy mountain slopes in the eastern Cape Province.

Much like *L. juncea*, distinguished by the longer narrower leaves, the larger flowers on long pedicels, and the larger fruit.

SOMERSET EAST. Boschberg, *Bolus* 347 (BOL); *MacOwan* (BOL).

FORT BEAUFORT. Katberg, *Hutton* (S).

STUTTERHEIM. Stutterheim, *Sim* (K).

CATHCART. Kalogha Range, *Acocks* 9808 (PRE).

LIST OF NUMBERED SPECIMENS.

- ACOCKS. 111 *nodosa*; 321 *nodosa*; 710 *denticulata*; 1576 *denticulata*; 1621 *nodosa*; 2166 *denticulata* v. *transvaalensis*; 9198 *juncea*; 9635 *nodosa*; 9808 *laxiflora*; 10858 *denticulata* v. *transvaalensis*; 11189 *albens*; 11375 *Huttonii*; 11900 *juncea*; 12474 *denticulata* v. *transvaalensis*; 12502 *denticulata*; 12518, 12584 *denticulata* v. *transvaalensis*; 12799 *denticulata*; 12812 *albens*; 13618 *divaricata*; 14543, 14925 *Thunbergiana*; 15195 *umbellata*; 15246 *Thunbergiana*; 15673 *albens*; 16283 *juncea*.
- ADAMSON. 717 *longifolia*; 778 *subulata*; 836 *longifolia* v. *corymbosa*; 909 *longifolia*; 1261 *parvifolia*; 1363 *diffusa*; 1683-4 *tenuis*; 2334 *parvifolia*; 2336 *tenuis*; 2385 *subulata*; 2432 *oppositifolia*; 2461 *diffusa*; 3632 *oppositifolia*; 3789 *calcareae*; 3914 *cinerea*; 4043 *subulata*; 4105, 4126 *brachyphylla*; 4174 *axillaris*; 4210 *rubrioides* v. *Stokoei*; 4326 *tenella*; 4331, 4333 *rubrioides*; 4338 *fasciculata*; 4353 *cinerea*; 4360 *parvifolia*; 4361 *fasciculata*; 4370 *pauciflora*; 4375 *cinerea*; 4376 *unidentata*; 4377 *fasciculata*; 4437 *rubrioides*; 4464 *oppositifolia*; 4469 *parvifolia*; 4698-9 *diffusa*; 4742 *subulata*; 4742A *subulata* v. *tenuifolia*; 4746 *subulata*; 4747-8 *oppositifolia*; 4750 *subulata* v. *tenuifolia*; 4759-60-1 *tenuis*; 4766 *diffusa*; 4768 *axillaris*; 4769 *rubens*; 4770 *cinerea*; 4771 *diffusa*; 4772 *subulata*; 4777 *cinerea*; 4779 *subulata*; 4787 *diffusa*; 4788-9-90 *calcareae*; 4792-3-4 *calcareae*; 4797-8-9 *rubens* v. *brachyphylla*; 4800-1 *rubens* v. *brachyphylla*; 4803 *cinerea*; 4805 *cinerea*; 4806 *rigida*; 4807-8 *cinerea*; 4811 *diffusa*; 4812 *subulata* v. *congesta*; 4814 *calcareae*; 4816 *diffusa*; 4818-9 *calcareae*; 4821-2 *diffusa* v. *palustris*; 4823 *nodosa*; 4824 *rubens*; 4825 *nodosa*; 4826-7 *rubens*; 4830 *cinerea*; 4832 *pauciflora*; 4836-7 *cinerea*; 4839 *fasciculata*; 4840 *unidentata*; 4841-2 *fasciculata*; 4843 *cinerea*; 4844 *planifolia*; 4845 *fasciculata*; 4846 *cinerea*; 4847 *multiflora*; 4849 *cinerea*; 4850 *multiflora*; 4851 *fasciculata*; 4853 *unidentata*; 4854 *fasciculata*; 4856 *stricta*; 4857 *fasciculata*; 4860-1 *divaricata*; 4862 *stricta*; 4863 *rubrioides*; 4865 *stricta*; 4867 *stricta*; 4868 *fasciculata*; 4869 *unidentata*; 4870-1 *fasciculata*; 4873 *rubens*; 4875 *cinerea*; 4876 *rigida*; 4878-9 *cinerea*; 4881 *rigida*; 4882-3 *cinerea*; 4885 *rigida*; 4886 *cinerea*; 4888 *cinerea*; 4889 *tenella* v. *montana*; 4890, 4892, 4894, 4896 *subulata*; 4897 *oppositifolia*; 4903, 4906-7 *axillaris*; 4909-10 *rubrioides*; 4911-2 *subulata* v. *tenuifolia*; 4913 *brachyphylla*; 4915 *rubrioides*; 4916-7, 4919 *brachyphylla*; 4920 *rubrioides*; 4926 *parvifolia*; 4927 *tenuis*; 5036 *asparagoides*; 5052-3 *Thunbergiana*; 5095 *Thunbergiana*; 5101 *rigida*; 5104, 5112, 5126, 5130, 5137 *Thunbergiana*; 5161 *albens*; 5169 *rigida*; 5170 *tenella*; 5172, 5174-5-6 *rubens*; 5182 *cinerea*; 5184-5 *diffusa*; 5186 *rubens*; 5186A *diffusa*; 5187 *tenella*; 5190-1-2 *rubens*; 5193 *rigida*; 5194 *tenella*; 5200, 5202 *cinerea*; 5213, 5215-6-7-8-9-20 *nodosa*; 5221 *diffusa*; 5223 *adpressa*; 5225 *diffusa*; 5227 *longifolia*; 5232-3 *brachyphylla*; 5276 *unidentata*; 5284 *nodosa*.
- ANDREAE. 1320 *nodosa*.
- BARKER. 1195 *Thunbergiana*; 2113 *juncea*; 2150 *albens*; 4007 *longifolia*; 7193 *subulata*; 7224 *calcareae*.
- BARNARD. 398 *denticulata* v. *transvaalensis*.
- BAUR. 83 *juncea*; 596 *Huttonii*; 868 *juncea*; 991 *nodosa*; 1107 *albens*.
- BOLUS. 9 *nodosa*, *rigida* & *tenella*; 15 *diffusa* & *nodosa*; 86 *albens*; 222 *juncea*; 347 *laxiflora*; 486 *Thunbergiana*; 750 *subulata*; 1078 *rubrioides*; 1098 *rubens*; 1196 *abyssinica*; 2377 *divaricata* v. *debilis*; 2378 *unidentata*; 2379 *cinerea*; 2534 *denticulata*; 3275 *subulata*; 3880 *parvifolia*; 4162, 4164 *subulata*; 4165 *longifolia*; 5100 *rubrioides*; 6520 *Thunbergiana*; 6950 *rubrioides*; 7291 *diffusa*; 7404 *unidentata*; 8070 *cinerea*; 8568 *axillaris*; 8569 *calcareae*; 8664 *unidentata*; 8665 *divaricata* & *rubens*; 9114 *rubens*; 9140 *divaricata* v. *debilis*; 9350 *subulata*; 9408 *namaguana*; 10523 *albens*; 10525 *juncea*; 10892 *denticulata* v. *transvaalensis*; 11326 *denticulata* & *tenella*; 11585 *tenella*; 11586 *rigida*; 12096-7 *Huttonii*; 13314 *unidentata*; 13318 *denticulata* v. *transvaalensis*; 13814 *albens*.
- F. BOLUS. 177 *juncea*; 6456 *denticulata*.
- BOND. 118 *diffusa*; 250 *nodosa*; 1420 *spicata*; 1445 *rubrioides*.
- BOWIE. 2 *diffusa* v. *palustris*; 11 *cinerea*.
- BRIERLEY. 209 *albens*.

- BRUECKNER. 454 *denticulata*; 698 *albans*; 860 *nodosa*; 1058 *nodosa*.
 BRYANT. D. 177 *caledonica*.
 BRYNARD. 303 *nodosa*; 6152 *albans*.
 BURCHELL. 9 *subulata*; 177 *longifolia*; 284 *subulata*; 606 *oppositifolia*; 631A *fasciculata*; 722 *longifolia*; 1381 *nodosa*; 1575 *nodosa*; 1886 *nodosa*; 2000 *denticulata*; 2002 *denticulata*; 2302 *denticulata*; 2675 *nodosa*; 2692 *albans*; 2709, 2712 *nodosa*; 2720 *albans*; 2849 *subulata*; 3506 *divaricata*; 4583 *divaricata* v. *debilis*; 4682 *cinerea*; 4794 *rubens*; 4870 *divaricata* v. *debilis*; 4933 *rubens*; 6398 *diffusa*, *rigida* & *tenella*; 6736 *unidentata*; 6857 *unidentata*; 7845 *rigida*; 7849 *diffusa* v. *Stokoei*; 7903 *subulata*; 8164 *rubrioides*; 8634 *diffusa* v. *Stokoei*.
 BURKE & ZEYHER. 1064 *caledonica*; 1067 *paniculata*.
 BURTT-DAVY. 989 *paniculata*; 10136 *denticulata*; 11023 *denticulata*; 11327 *denticulata*; 12007 *rubens*; 12942 *denticulata*; 14377 *denticulata*; 14480 *denticulata*; 14649 *denticulata* v. *transvaalensis*.
 CODD. 2590 *denticulata* v. *transvaalensis*; 2688 *paniculata*; 6479 *paniculata*; 7910 *paniculata*; 8158 *Huttonii*; 8311 *Huttonii*.
 CODD & DE WINTER. 4965 *denticulata* v. *transvaalensis*.
 COLLETT. 469 *albans*.
 COMERS. 709 *divaricata*; 718 *nodosa*; 719 *albans*.
 COMPTON. 2650, 2653-4 *nodosa*; 2765 *rigida*; 2785 *nodosa*; 2998 *divaricata*; 3380 *subulata*; 3848 *rigida*; 3868 *Thunbergiana*; 4853 *subulata*; 5216 *rubens*; 5220 *cinerea*; 6065 *longifolia*; 6358 *diffusa*; 6811 *Thunbergiana*; 6859 *parvifolia*; 7199 *cinerea*; 7953 *nodosa*; 8430 *rubrioides*; 8579 *diffusa* v. *palustris*; 8608 *rubens*; 8329 *nodosa*; 9946 *nodosa*; 10119 *longifolia*; 10275 *tenella*; 10318 *parvifolia*; 10550 *cordata*; 10619 *diffusa*; 11514 *Thunbergiana*; 12194 *nodosa*; 12330 *subulata*; 12517, 12578 *diffusa*; 12595 *subulata*; 12796 *diffusa*; 14265 *subulata*; 14349 *divaricata*; 14399 *adpressa*; 15506 *unidentata*; 15682 *albans*; 16587 *subulata*; 16615 *longifolia*; 16896 *rubrioides*; 16947 *oppositifolia*; 17181 *Thunbergiana*; 17888 *adpressa*; 17927 *longifolia*; 18280 *nodosa*; 18581 *diffusa*; 19339 *juncea*; 19490 *nodosa*; 19521 *divaricata*; 19662 *albans*; 19668, 19671 *divaricata*; 21167 *nodosa*; 21187 *longifolia*; 21471 *parvifolia*; 21642 *albans*; 21859 *diffusa*; 21918 *rubrioides*; 22152 *calcareae*; 22702 *longifolia*; 23545 *divaricata*.
 CONNELL. 37 *denticulata*.
 COOPER. 654 *albans*; 774 *albans*; 1808 *juncea*; 2657 *Huttonii*; 2674 *denticulata*.
 CROSS. 50 *diffusa* & *nodosa*.
 DALY & SOLE. 360 *nodosa*.
 DAVIDSON. 119 *Huttonii*.
 DIETERLEN. 332 *denticulata*; 402 *albans*; 528 *caledonica*; 1196 *albans*; 1292 *denticulata*; 6980 *caledonica*.
 DINTER. 1471, 3497, 6068 *intricata*.
 DIX. 88 *divaricata*.
 DREGE. 166, 166b *Thunbergiana*; 4005 *denticulata*; 6294 *divaricata*; 6300 *denticulata*; 6306 *parvifolia*; 6308 *nodosa*; 6309 *asparagoides*; 6311 *divaricata*; 6312 *subulata*; 6314 *oppositifolia* & *spicata*; 6315 *parvifolia* & *spicata*; 6316 *tenella* & *divaricata* v. *debilis*; 6317 *divaricata*; 6317a *albans* & *nodosa*; 6317b *divaricata*; 6318 *rigida*; 6319 *albans*; 6320 *rubens*; 7496 *divaricata*; 9138 *rubens*; 9139b *Thunbergiana*.
 DUTHIE. 813 *fasciculata*; 814 *divaricata*; 915 *divaricata* v. *debilis*.
 DYER. 1450 *diffusa*; 1909 *albans*; 1981 *Huttonii*; 2206 *albans*.
 ECKLON. 1 *subulata*; 78 *longifolia*; 151 *parvifolia*; 156 *diffusa*; 280 *subulata*; 2350 *cinerea*; 2363 *divaricata* v. *debilis*.
 ECKLON & ZEYHER. 2-11 *nodosa*; 15-3 *divaricata*; 54 *divaricata*; 70 *divaricata*; 94-12 *tenella*; 151 *parvifolia*; 2313 *divaricata* v. *debilis*; 2340 *subulata*; 2341 *longifolia*; 2342 *denticulata* & *oppositifolia*; 2343 *divaricata*; 2344-5 *divaricata*; 2346 *rubens*; 2347 *cinerea*; 2348 *adpressa*; 2349 *spicata*; 2350 *albans*; 2351-2 *divaricata*; 2353 *divaricata* & *divaricata* v. *debilis*; 2354-5 *diffusa*; 2356 *tenella*; 2357 *diffusa*; 2357a *nodosa*; 2358 *nodosa*; 2359 *Thunbergiana*; 2360 *parvifolia*; 2361-2 *oppositifolia*; 2363 *divaricata*; 2366 *parvifolia*; 2378 *denticulata*; 2400 *juncea*.
 ESTERHUYSEN. 1350 *Thunbergiana*; 1473 *rubrioides*; 1840 *cordata*; 2059 *denticulata*; 2373 *nodosa*; 3081 *subulata*; 3653 *nodosa*; 4056 *longifolia*; 4200 *rubrioides*; 4424 *calcareae*; 4441 *diffusa*; 4514 *cordata*; 4732-3 *cordata*; 4926 *axillaris*; 4973 *axillaris*; 6274 *rigida*; 6435 *Thunbergiana*; 6480 *tenella*; 6613 *divaricata* v. *debilis*; 6667 *rigida*; 6691 *tenella*; 6897 *divaricata* v. *debilis*; 7427 *multicaulis*; 7707

- oppositifolia*; 8575 *rubroides*; 8793 *parvifolia*; 9795 *parvifolia*; 9951 *spicata*; 10052 *parvifolia*; 10060 *oppositifolia*; 10618 *divaricata* v. *debilis*; 10648 *rigida*; 10668 *divaricata* v. *debilis*; 10756 *rigida*; 10795 *rigida*; 10911 *rigida*; 11450 *parvifolia*; 12257 *spicata*; 12336 *subulata*; 12470 *subulata*; 12566 *oppositifolia*; 12580 *axillaris*; 12626 *subulata*; 13316 *fasciculata*; 13320 *subulata*; 13418, 13420 *rubroides*; 13675 *cinerea*; 13703 *axillaris*; 13718 *subulata*; 13821 *rubroides*; 14301 *rubroides*; 15014 *multicaulis*; 16488 *tenella*; 16619 *spicata*; 16792 *rubens*; 17210 *unidentata*; 19229 *fasciculata*; 17237 *tenella*; 17238 *diffusa* v. *palustris*; 17767 *spicata*; 18420 *cordata*; 19096 *calcareae*; 19505 *tenella*; 19567 *calcareae*; 21106 *oppositifolia*; 21139 *multicaulis*; 22018 *subulata*; 22073 *spicata*.
 EVANS. 367 *Huttonii*; 647 *Huttonii*.
 FAIRALL. 1607 *paniculata*.
 FAWKES. 127 *caledonica*.
 FINE. G 109 *tenella*.
 FLANAGAN. 1361 *albens*; 1465 *nodosa*; 1477 *denticulata*; 1500 *cinerea*; 2283 *Huttonii*; 2688 *Huttonii*; 2961 *denticulata* v. *transvaalensis*; 3079 *albens*.
 FOLEY. 180 *nodosa*; 2781 *denticulata*.
 FORBES. 20 *divaricata*.
 FOURCADE. 114 *divaricata* v. *debilis*; 184 *fasciculata*; 603 *cinerea*; 1082 *unidentata*; 1124 *divaricata*; 1124a *divaricata* v. *debilis*; 1149 *cinerea*; 1157 *unidentata*; 1347 *rubens*; 1467 *fasciculata*; 2076 *cinerea*; 2430a *unidentata*; 2899 *rubens*; 3030 *rigida*; 3911 *stricta*; 5071 *rigida*; 5519 *unidentata*; 5918 *rubens*; 6242 *tenella*; 6380 *fasciculata*; 6484, 6520 *divaricata*.
 GALPIN. 198 *albens*; 199 *diffusa*; 582, 1038, 1047 *Huttonii*; 1381 *axillaris*; 1670 *juncea*; 1791 *diffusa*; 2011 *albens*; 2062 *Huttonii*; 2222 *albens*; 4304 *tenella*; 4306 *diffusa*; 4307 *subulata*; 4969 *albens*; 6273, 6371-2 *divaricata*; 7145 *caledonica*; 8951 *rubens*; 9020 *denticulata*; 9852 *Huttonii*; 11269 *axillaris*; 11469 *divaricata*; 12449 *subulata*; 12554 *parvifolia*; 12768, 12912-3 *longifolia*; 13276 *paniculata*.
 GARSIDE. 678 *subulata*.
 GEMMELL. 5814 *caledonica*.
 GERRARD. 748 *Huttonii*; 1501 *denticulata* v. *transvaalensis*.
 GERSTNER. 142 *albens*; 260 *denticulata*.
 GILL. 78 *nodosa*.
 GILLETT. 525 *rubroides*; 743 *rubroides*; 753 *subulata* v. *tenuifolia*; 774, 878 *parvifolia*; 882 *cinerea*; 1512 *longifolia*; 5254 *subulata*.
 GLASS. 725 *divaricata* v. *debilis*.
 GUILLERMOD. 372 *nodosa*; 529 *albens*; 894 *albens*; 1190 *albens*.
 GUTHRIE. 9 *unidentata*; 754 *longifolia*; 1150 *subulata*; 1348 *diffusa*; 1429 *parvifolia*; 2274 *parvifolia*; 4341 *rubens*; 4346 *unidentata*; 4459 *albens*; 4481 *calcareae*.
 HAFSTROM & ACOCK. 1475 *Huttonii*; 1476 *cinerea*; 1478 *rubroides*; 1988 *cinerea*; 2008 *calcareae*.
 HARVEY. 55 *albens*; 260 *parvifolia*; 438, 458 *longifolia*; 470, 475 *subulata*; 490 *subulata*; 500 *longifolia*; 501 *parvifolia*; 1008 *nodosa*; 12117-8 *oppositifolia*; 12121 *parvifolia*.
 HENDERSON. 2330 *rubroides*.
 HENRICI. 177 *denticulata*; 1868 *albens*; 2571 *denticulata*; 2901-2 *nodosa*; 2947 *nodosa*; 4751 *nodosa*.
 HEPBURN. 201 *albens*.
 HUTCHINSON. 1272 *fasciculata*; 1588 *denticulata*; 1596 *nodosa*; 3000 *nodosa*; 3079 *albens*.
 HUTCHINSON & DYER. 1700 *juncea*.
 HUTTON. 881 *caledonica*.
 JUNOD. 1066 *paniculata*.
 KEET. 677 *fasciculata*; 957 *fasciculata*.
 KIES. 221 *denticulata*.
 KRAUSS. 102 *denticulata*; 103 *denticulata* v. *transvaalensis*.
 LEEMANN. 66 *paniculata*; 101 *paniculata*.
 LIEBENBERG. 3004 *denticulata*.
 LEIGHTON. 922 *rubroides*; 1130 *Thunbergiana*; 1995 *Thunbergiana*; 2449 *longifolia*.
 LEIPOLD. 3708 *subulata* & *subulata* v. *tenuifolia*; 4347 *asparagoides*.

- LEVYNS. 512 *Thunbergiana*; 1130 *Thunbergiana*; 2069 *diffusa*; 2867 *tenella*; 3557 *subulata*; 4078 *Thunbergiana*; 5115 *rigida*; 5341 *rubrioides*; 5374 *axillaris*; 5516 *effusa*; 5612 *longifolia*; 5615 *tenuis*; 5626 *tenuis*; 5632 *longifolia* v. *corymbosa*; 7821 *divaricata*; 8805 *axillaris*; 8822 *squarrosa*.
- LIENDERTZ. 581 *denticulata* v. *transvaalensis*.
- LONG. 800 *nodosa*; 1235 *divaricata* & *rubens*.
- LOUW. 1094 *denticulata*; 1300 *caledonica*; 1327 *denticulata* v. *transvaalensis*.
- LYNES. Z. 671. G. *albens*; Z. 671 a.r. *divaricata*; 1442 *albens*.
- McCLEAN. 613 *Huttonii*.
- MacGILLIVRAY. 611 *parvifolia*; 640 *subulata*.
- MACOWAN. 181 *divaricata* v. *debilis*; 750 *subulata*; 953 *nodosa*; 1101 *divaricata* v. *debilis*; 1133 *nodosa*; 1429 *laxiflora*; 1500 *cinerea*; 1504 *divaricata* v. *debilis*; 2080 *cinerea*.
- MAGUIRE. 834 *microphylla*; 1082 *subulata*; 1231 *subulata*.
- MARAIS. 231 *denticulata*.
- MARLOTH. 749 *nodosa*; 1337 *denticulata*; 3276 *subulata*; 4811 *intricata*; 9484 *parvifolia*; 9485 *subulata*; 9486 *longifolia*.
- MARTIN. 36 *divaricata*; 387 *fasciculata*; 590 *calcareae*.
- MOGG. 4730 *divaricata*; 8357 *denticulata*; 14669 *Huttonii*; 20238 *paniculata*; 21033 *denticulata*.
- MORRIS. 124 *subulata*; 387 *cinerea*.
- MOSS. 750 *paniculata*; 973 *paniculata*; 1617 *diffusa*; 3434 *paniculata*; 3435 *longifolia*; 5388 *subulata*; 6063 *subulata*; 7438-9 *caledonica*; 7498 *longifolia*; 7499 *longifolia* v. *corymbosa*; 7529 *diffusa*; 7544 *parvifolia*; 7546-7-8 *subulata* 7562 *diffusa*; 7564 *subulata*; 9060 *adpressa*; 9515 *denticulata* v. *transvaalensis*; 14905 *caledonica*.
- MOSS & ROGERS. 1646 *longifolia*; 1703 *parvifolia*.
- MUIR. 326 *parvifolia*; 1384 *tenella*; 1386 *unidentata*; 1387 *rubens*; 1389 *fasciculata*; 1433 *fasciculata*; 1449 *unidentata*; 1813 *multiflora*; 2626 *diffusa* v. *palustris*; 2627 *squarrosa*?; 2628 *planifolia*; 2629 *tenella*.
- MUNRO. SN 1943 *denticulata* v. *transvaalensis*.
- MURRAY. 544 *caledonica*; 710 *paniculata*.
- OBBERMEIJER. 3 *paniculata*; 414 *paniculata*; 2117 *paniculata*.
- OLDENBURG. 714 *fasciculata*.
- PARKER. 3635 *subulata*; 4176 *diffusa*.
- PATERSON. 55 *divaricata*; 294 *divaricata*; 323 *tenella*.
- PEARSON. 2099 *nodosa*; 3234 *subulata*; 5312 *spicata*; 6531 *Thunbergiana*; 8552 *intricata*.
- PEGLER. 1081 *Huttonii*; 1667 *juncea*.
- PENTHER. 2754 *divaricata* v. *debilis*; 2760 *Huttonii*.
- PHILLIPS, E. P. 2013 *rigida*; 3125 *albens*.
- PILLANS. 4324 *oppositifolia*; 5182 *spicata*; 5344 *asparagoides*; 8768 *spicata*; 8789 *axillaris*; 9377 *rubens* v. *brachyphylla*; 9594 *rigida*; 9763 *rubrioides*; 9692, 9695 *rigida*; 9877 *rubens* v. *brachyphylla*; 12257 *spicata*; 18137 *asparagoides*; 18138 *Thunbergiana*.
- POCOCK. S 117 *parvifolia*.
- POLE EVANS. 61 *oppositifolia*; 1621 *nodosa*; 1646 *albens*; H. 13572 *nodosa*.
- PONT. 251 *denticulata*.
- POTT. 4707 *brachiata*.
- POTTS. 939 *albens*; 1896 *nodosa*; 2621-2 *denticulata*; 5001 *subulata*; 5043 *longifolia*; 13316 *denticulata*.
- PRIMOS. 70 *tenella*.
- RAND. 1252 *caledonica*; 1293 *paniculata*.
- REHMANN. 429 *adpressa*; 767 *parvifolia*; 1047 *parvifolia*; 1049 *subulata*; 1945 *adpressa*; 1947 *longifolia*; 2609 *spicata*; 3504 *nodosa*; 3872 *denticulata*.
- RENNIE. 468 *divaricata*.
- REPTON. 377 *denticulata* v. *transvaalensis*; 439 *paniculata*; 1683 *denticulata* v. *transvaalensis*.
- RODIN. 3081 *subulata*; 3243 *parvifolia*.
- ROGERS. 1342 *tenella*; 1516 *nodosa*; 11544 *Huttonii*; 12671 *denticulata*; 14536 *paniculata*; 17898 *nodosa*; 20628 *denticulata* v. *transvaalensis*; 22515 *denticulata*; 22525 *denticulata*; 23832 *denticulata* v. *transvaalensis*; 24035 *Huttonii*; 24920 *denticulata* v. *transvaalensis*; 26606 *tenella*.

- RUDATIS. 898 *Huttonii*.
 SALTER. 291/17 *subulata*; 291/18 *longifolia*; 291/19 *parvifolia*; 291/20 *diffusa*; 291/21 *oppositifolia*; 292/4 *adpressa*; 2990 *longifolia*; 3731 *longifolia*; 3993 *adpressa*; 4101 *calcareia*; 4923 *diffusa*; 5115 *subulata*; 5200 *rubrioides*; 5704 *tenuis*; 5723 *subulata*; 5974 *longifolia* v. *corymbosa*; 6327 *Thunbergiana*; 6528 *longifolia*; 9026 *longifolia*.
 SALTMARSH. 1047 *Huttonii*.
 SANKEY. 148 *Huttonii*.
 SCHLECHTER. 48 *longifolia*; 56 *rubrioides*; 95 *parvifolia*; 96-7 *rubrioides*; 383 *rubrioides*; 599 *axillaris*; 600 *rubrioides*; 1122 *Thunbergiana*; 1475 *calcareia*; 1770 *brachyphylla*; 1889 *tenella*; 1894 *longifolia*; 1995 *rigida*; 2301 *unidentata*; 2474 *tenella*; 2476 *divaricata* v. *debilis*; 3580 *parvifolia*; 4343 *denticulata* v. *transvaalensis*; 5164 *subulata*; 5477 *brachiata*; 5901 *divaricata* v. *debilis*; 7244 *axillaris*; 7527 *rubrioides*; 7529 *cordata*?; 7757 *cinerea*; 8321 *Thunbergiana*; 9352 *rubrioides*; 9683 *calcareia*; 9810 *parvifolia*; 9857 *rubrioides*; 9898 *parvifolia*; 10112 *brachyphylla*; 10182 *spicata*; 10202 *rigida*; 10429 *longifolia*.
 SCHOENFELDER. 953 *nodosa*.
 SCHONLAND. 3230 *rubens*; 3364 *tenella*; 4467 *Huttonii*.
 SCHWEICHERDT. 1197 *nodosa*.
 SCOTT-ELLIOT. 835 *divaricata* v. *debilis*.
 SCULLY. 145 *namaquensis*.
 SDEY. 455 *nodosa*; 2061 *Huttonii*.
 SMITH, C. A. 3544 *denticulata*; 4267 *rubens*; 5147 *subulata*; 5271 *nodosa*; 5351 *nodosa*; 5462 *albans*; 5593A *nodosa*.
 SMUTS & GILLET. 2336, 2388 *Huttonii*.
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